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ABSTRACT

This collection of materials on small computer applications in research libraries, assembled by the Systems and Procedures Exchange Center (SPEC) of the Association of Research Libraries (ARL), includes documents from ARL and non-ARL libraries illustrating local, commercial, and word processing computer applications. Among the contents of the collection are: (1) a list of small computer applications in ARL libraries as reported during the Spring 1981 SPEC survey; (2) a microcomputer bibliography; (3) papers on local applications of small computers in research libraries, including discussions of an experimental online catalog at Dartmouth College, microcomputer utilization in the Texas A&M Medical Sciences Library, microcomputer uses at Southern Illinois University, microcomputer applications in word processing at McMaster University, and the Apple computer as a tool for the improvement of library operations at California State University; and (4) papers on general commercial applications of small computers, including a fact sheet on the integrated library system at the National Library of Medicine, a description of the Inform system at Brown University, and a description of a commercial word processing system at Queens University. (JL)

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The Use of Small Computers in ARL Libraries

Kit 77

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THE USE OF SMALL COMPUTERS IN ARL LIBRARIES

While some enthusiasts have predicted that small scale computers would take the library world by storm, instead, there has been a steady grassroots movement toward their use. Minicomputers -- made possible by integrated circuits -- appeared as low-cost alternatives to large systems in the 1960's and were devoted mainly to circulation control. More recently, libraries are introducing microcomputers, which use a microprocessor as their central processing unit. Microcomputers vary a great deal in their applications; they are designed for scientific, personal and business data computing. For that reason, in addition to traditional library applications, micros are beginning to be used in areas that were largely untouched by earlier library automation attempts, such as office management, accounting, media control, purchasing and inventory, teaching and research, and word processing.

In a survey of Association of Research Library members, with slightly over half of the libraries responding (54), 45% (25) indicated they were currently using microcomputers in some capacity. Nineteen percent (10) indicated they had plans to use micros or were considering them. Thirty-six percent (19) said they had no plans to use micros at this time. Research libraries present special problems for library automation due to the size of their collections. Many of the traditional applications of library automation are still too large for microcomputers at this stage of technology. The survey showed microcomputers being used in support roles in collection management areas and more extensively in general office management areas.

CONTRIBUTING AND LIMITING FACTORS. With changes occurring rapidly in hardware development, it is difficult to make specific statements concerning microcomputer capabilities that will be valid or timely for more than a few months. However, some general characteristics can be examined. Several factors have contributed to the use of microcomputers. The initial investment is low—as little as $2500 for a full system including a central processor, printer display terminal, and memory. While minicomputers require special installation with air conditioning and power conditioning, micros are designed to be more tolerant of a normal office environment. Much less site preparation is required for the installation of a micro. Microcomputers also require little space; usually a desk top will suffice. And because they are portable, it is possible to take the micro to the problem rather than the problem to the micro. Lastly, microcomputers have been designed to be user-friendly; their growing popularity for personal, home use and the relative ease of learning how to operate a micro creates a more positive climate for library staff acceptance and use.

The data storage available at this stage of microtechnology is increasing rapidly. A typical microcomputer has floppy disk storage that will accommodate around 2000 MARC records or 500 pages of text. Until recently, the upper limit for the more expensive Winchester-type disk for micros was about 130,000 MARC records or 30,000 pages of text. Now, Winchester-type disk drives are available in sizes up to 167 Megabytes (or even more). The cost of storage on this larger drive would be higher than on diskettes, but it eliminates the costs of personnel to constantly reload floppy diskettes.

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An important limiting factor in the adoption of micros by libraries has been the lack of data base management systems (DBMS). The DBMS software makes it possible to locate a record with any one of several access keys without creating separate records for each access point. This is fundamental for libraries, which normally require six or more access points to the same information. Until this past year the memory requirements of DBMS packages were too great to fit on most micros.

Another limitation is the amount of space in the micro in which a program can run -- called "core" in computer jargon. A program to run on a micro must be very efficiently written to fit in this space. Often a program is written on a larger computer, compiled and then read into the micro. This is called "downloading". In addition, a micro normally has a much lower processing speed than minis and mainframes. One has to look not only at the question of accommodating files, but also whether the planned transaction rate can be achieved within reasonable response time requirements.

Although micros are designed for normal office environments, libraries which have had micros over at least one year report some problems with static electricity, requiring them to obtain humidifiers and anti-static mats. A portable humidifier, while inexpensive, can be a nuisance to maintain. It is also not uncommon to suffer data loss and damage from power surges. Libraries have been cautioned to regularly back up diskettes and carry insurance on the system.

NEEDS AND TRENDS. The lack of commercially available software for library applications has slowed the usefulness of micros. The very success of the technology has contributed to this scarcity, creating a dynamic hardware environment that has militated against software development: The best software development takes place in a static hardware environment. Libraries that are reporting innovative uses of micros often are benefitting from the initiative of individual staff members who have interests or skills in developing programs.

In addition, there has been a lack of resource-sharing of software among libraries. Micro-applications have had a low profile because the cost of the hardware is a small line item in most library budgets. The applications have been largely non-public in nature, and no good medium for software exchange has been developed.

Academic libraries should see the possibilities of microcomputers increase as the technology improves and costs decline. As it stands now, peripherals — such as high-qaulity printers or hard disk storage -- can easily exceed the cost of the micro itself. However, better and less expensive equipment is being developed. Fast dot-matrix printers will replace the slower, expensive impact printers. Bubble memories and video disk technology may further push back the storage barriers, while larger and faster core memory can speed the processing capability of the microcomputers themselves. At the same time, languages and operating systems that are user-cordial and easier to access are emerging. Also being developed is improved networking, to allow communication between libraries and among libraries and personal computers in homes or offices.

This flyer and kit includes three classes of computers as identified in the SPEC survey. First is the personal or hobby computer typified by the Apple, the Radio Shack TRS-80, Pet and Atari. The second class is the larger micro such as the Terak, LSI/11 and Vector Graphics. A third class, some of which are not technically micros, is the small business computer used primarily for word processing, such as the Lanier and the Xerox 100.

The kit includes 15 documents (107 pages) from ARL and selected non-ARL libraries illustrating local, commercial, and word processing applications and planning. A listing of small computer applications in ARL member libraries also is included, and will be maintained and updated given sufficient interest. SPEC Kits are available by subscription from from the Systems and Procedures Exchange Center, OMS/ARL, 1527 New Hampshire Ave., N.W., Washington, D.C., 20036. Individual kits may be purchased—prepaid only—for $15.00 (U.S.), with checks made payable to "ARL Office of Management Studies."

This flyer and kit was prepared by Lawrence Woods, Head of Research and Development, Purdue University Libraries, as part of the OMS Collaborative Research Writing Program.

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SPEC KIT/FLYER FEEDBACK FORM

The documents included in this Kit are for the most part working tools developed by Association of Research Library members to meet their individual, specific needs. Such materials are not intended to provide models or prototypes that can simply be copied by other libraries. Instead, they can stimulate further research and improvement in the management and operations of academic and research libraries.

SPEC kits/flyers serve as one way to share management-related information among the nation's large academic libraries. As a clearinghouse for such information, SPEC also loans back-up file documents collected from ARL members, designs and conducts surveys, and answers telephone and written queries from SPEC subscribers.

We will appreciate feedback on your uses for this Kit:

1. Kit Title/Number ________________________________

2. How did you use the kit/flyer materials?

3. Please indicate how useful the kit/flyer was for your purpose.

☐ Not Useful ☐ Somewhat Useful ☐ Quite Useful ☐ Very Useful

4. Do you have suggestions for future kits/flyers?

NAME ____________________

LIBRARY ____________________

PHONE ____________________

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THE USE OF SMALL COMPUTERS IN ARL LIBRARIES
KIT #77
AUGUST - SEPTEMBER 1981

TABLE OF CONTENTS

PAGE

Listing of Small Computer Applications in ARL Member Libraries as Reported in Spring 1981 SPEC Survey 1

Bibliography (June 1981) 6

LOCAL APPLICATIONS

Experimental On Line Catalog for the Dartmouth College Libraries (April 1980). Dartmouth College. 8

Memos on Machine Costs for Storage Retrieval System (March 1981). Purdue University. 20

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Letter Describing Micro Application and Memo on Word Processing for McMaster Universty (March 1981, July 1980). Ohio State University. 64

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GENERAL OR COMMERCIAL APPLICATIONS

Project Report Fact Sheet, and Implementation Costs Sheet on the Integrated Library System (October 1980). National Library of Medicine. 85

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Costs and Brief Description of CLSI Backup on Apple Used at Brigham Young, Johns Hopkins. 93

Descriptions of Commercial Word Processing System, and Computing Centre Memos on Word Processing Organization and Management. Queens University. 96

spec flyer AUG.SEPT. 1981 OMS
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SMALL COMPUTER APPLICATIONS IN ARL MEMBER LIBRARIES AS REPORTED IN SPRING 1981 SPEC SURVEY*

AREA: Technical Processing

APPLICATION	MICROCOMPUTER USED	PERIPHERALS USED	INSTITUTION
Data Entry	Four-Phase System Q/60	Terminal;Disk Storage;215 fixed;215 removeable; units from four-phase	Univ. of Illinois/ Urbana
Tech service data entry for batch acquisitions system	Mohawk Data Sciences Series 21	Floppy disk; Terminal	Univ. of Nebraska/ Lincoln
MEDLINE;Inter-library loan; "QSORT";"NAD"; Reserve List	CPT Corp. 8000	Floppy Disk	Univ. of Washington Health Sciences/ Seattle
Media Equipment Control system	Vector Graphics	Floppy disk; Terminal printer	Indiana Univ. Grad. School of Library and Info. Science

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*Additions or revisions are welcome. This listing will be maintained and updated, given sufficient ARL member interest.

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AREA: Multiple Use

APPLICATION	MICROCOMPUTER USED	PERIPHERALS USED	INSTITUTION
Backup for CLSI Circulation System Minor Word Processing;Minor local manpower scheduling for circulation desk	Apple II Plus	Floppy Disk;GBC Monitor; Paper Tiger Printer	Univ. of Cal./ Santa Barbara
Curriculum Resources Center-Media/Library -Circulation -Cataloging -20,000 items	Vector Graphics MZ	Winchester type disk; Terminal; Hewlett-Packard HED3 3050 Bar Code Reader; Anderson-Jacobson 830 Daisy Printer	Univ. of Cincinnati
CLSI Circulation Back-up Statistical Programs	Apple II	Floppy Disk; Terminal	Johns Hopkins Univ.
CLSI back-up Limited word processing;Data base accounting; Planning;Student scheduling	Apple II Plus	Floppy Disk; Micromodern; 80-column converter; 132-column printer	Michigan State/ East Lansing
Collection Control (circulation) Collection Management Support (Serials check-in, shelving, usage statistics)	LSI/11 (DEC)	Winchester-type disk; Terminals, printers, bar code readers	National Library of Medicine
Acquisition, Text-editing, word-processing	Micromation	ALT-V-A CRTs; Ven-tel modems; Diablo printer	Texas A&M Medical Science Library
Intelligent interface to BRS/MEDLINE;A/V inventory; CAI programs	Apple II Plus	Floppy disk; Terminal	St. Luke's Methodist Hospital
Coin-operated public general use micros	Atari 800	Color monitor cassette tape deck	Ohio State Univ.

AREA: Management (general office)

APPLICATION	MICROCOMPUTER USED	PERIPHERALS USED	INSTITUTION
Text Editing Key Entry	DEC LSI 11/2	Floppy disk;Terminal; TI820KSR printer; Diablo 1640 printer	Univ. of Cal./ Davis
Purchasing & inventory; administrative office tasks	(very preliminary stages)	N/A	Univ. of Cal./ LA
General Office	Lanier LTE--2 typing system	Floppy disk;Terminal; Printer Qume Sprint 345	Colorado St. Univ.
Data Base & Personnel Management; Archival information	TRS-80 II	Floppy disk;printer, Daisy Wheel II	Univ. of Colorado
Word Processing	Xerox 100		Iowa State Univ.
Payroll Records/ Word Processing	?	Floppy Disk	Univ. of Mich./ Ann Arbor
Correspondence; production of exhibit catalogs; production camera-ready copy for books	CPT Corp. 8000	Floppy Disk;Terminal; Rotary V Printer Daisy wheel printer with letter/correspondence quality output)	Ohio State Univ.
Retrieval system for compact storage	DEC PDP 11/24	Floppy Disk;Terminal	Purdue Univ.
Word Processing (Q-Text)	DEC PDP 11/03	Floppy Disk;Terminal; Printer--Xerox Diablo 1620	Queen's Univ./ Canada
Word Processing	IBM Display Writer		Southern Illinois/ Carbondale
Data Entry; Accounting	IBM 5285	Floppy Disk	Univ. of Tennessee
Management Data HEGIS/LIBGIS Statistics Circulation statistics Personnel directory	Apple II Plus	Floppy Disk	Southern Illinois/ Edwardsville
Word Processing	Apple II Plus	Hy-type 1 printer	Cal. State/ Northridge

AREA: Management (general office)

APPLICATION	MICROCOMPUTER USED	PERIPHERALS USED	INSTITUTION
Serials Management; Word processing; Supplied inventory; Mailing list; Staff calendars & timetables	Radio Shack TRS 80 Lev.II	Floppy Disk; Winchester type disk; Cassette Drive; Terminal; Daisy wheel printer	Univ. of Toronto
Word processing (for personnel files, salary data, statistics)	DEC WD78	Floppy Disk;Terminal	Univ. of Western Ontario
Word Processing	Lanier	Floppy Disk; Terminal	U.S. Dept. of Agric. Technical Information Systems
Research and Teaching	Apple II Plus ALTOS ALS-8000	Floppy Disk; Terminal	University of Chicago, Grad. Library School
Word Processing	VIDEL 1800	Floppy Disk; Terminal	Duke Univ.

AREA: Public Services

APPLICATION	MICROCOMPUTER USED	PERIPHERALS USED	INSTITUTION
Data Collection for circulation control	IMSAI Model 8080	Floppy Disk;Terminal	Univ. of Alberta
Circulation System Front End	N/A	Floppy Disk;Terminal	Columbia Univ.
User Interface to On-line Catalog	Terak	Floppy Disk;Terminal	Dartmouth College
Circulation System Backup	(planned, borrowed from another Univ.)		Univ. of Houston central campus
Circulation	DEC PDP 11/03	Floppy Disk;Terminal; Interface, Digital Equipment, DLV11; Terminals, Epic Data, Model 1647; Bar Code readers, model 9210	Univ. of Missouri
Circulation System Front End and Backup	Intel 8080	Floppy Disk;Terminal connected to Sigma 9 Mainframe	Oberlin College
Automated Reference Data base	LSI/11 (DEC)	Floppy Disk;Terminal	Univ. of Missouri/ Columbia
Backup for CLSI Circulation System	Apple II Plus	Floppy Disk;Display terminal; light pen	Brigham Young Univ.
General Information System	North Star Horizon	Floppy Disk;Display terminal with touch screen, printer	Providence, R.I. Public Library (Proposed for Brown Univ.)
Computer Assisted Instruction	Apple II	Floppy Disk;Graphics Tablet, printer	Kent State Univ.
Back-up to CLSI	Apple II	Floppy Disk	Univ. of Pennsylvania

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LOCAL APPLICATIONS

EXPERIMENTAL ON LINE CATALOG
FOR THE
DARTMOUTH COLLEGE LIBRARIES

BY

EMILY GALLUP FAYEN
DIRECTOR, ON-LINE PILOT PROJECT
CHIEF, SYSTEMS MAINTENANCE AND DEVELOPMENT

DARTMOUTH COLLEGE
HANOVER, NEW HAMPSHIRE 03755
APRIL 1980

16

1. Introduction

Dartmouth College has been conducting a pilot project to assess the feasibility of an on-line catalog for library staff members, faculty, students, and members of the Dartmouth community. The objectives of the pilot project (as stated in May 1979) are as follows:

1. Investigate the feasibility of using the Dartmouth OCLC transaction records as a data base for developing an on-line retrieval system for the Dartmouth Libraries.

2. Develop a "user-cordial interface" that will enable any member of the Dartmouth community to access the Dartmouth Library data base for the purpose of identifying, locating, and obtaining items of interest.

3. Introduce the Dartmouth community to on-line searching of library materials. -Elicit comments and suggestions which can be incorporated in the continuing development of the user interface.

4. Conduct controlled experiments to compare access using the current card catalog with the on-line approach. Gain experience on usage and system characteristics which will permit knowledgeable expansion of the pilot project (if successful) to include all library materials for which machine-readable citations are available and to support multiple simultaneous users.

5. Assess the feasibility of including serials receipt control and on-line circulation control in an eventual integrated Dartmouth Library System.

6. Monitor the costs of maintaining the status quo versus moving toward more computer support of library operations. Determine benefits as well as costs which are crucial to informed decision making.

7. Coordinate development with planning taking place nationally and internally to respond to changes resulting from acceptance by LC of AACRII and closing its catalog 1/1/1981.

2. The On-line Pilot Project

As the first step in accomplishing these objectives, Dartmouth entered into an agreement with Bibliographic Retrieval Services (BRS) Incorporated in Scotia, N.Y. BRS agreed to create a data base for Dartmouth containing citations for all materials processed by Dartmouth since 1977. BRS also agreed to load these citations as a private data file (PDF) and to provide search support services through the BRS software.

Dartmouth's monthly OCLC transaction tapes were used as the source of machine-readable citations for building the data base. The OCLC/ MARC tags were mapped onto approximately 20 BRS paragraphs; e.g. main entry (ME), title (TI), series statement (SS). The data base now contains citations for over 120,000 items. These citations represent all materials cataloged by Dartmouth since 1977 and include not only monographs, but also serials, maps, music, manuscripts, and other items from special collections.

As part of its agreement with BRS, Dartmouth has been developing a user interface to the standard BRS on-line search procedures. This interface is aimed at meeting the needs of an intelligent user and assumes no special library or computer training.

There is no users' manual. A design assumption from the outset has been that the interface must be self-explanatory; that is, a new user should be able to start the search procedure in an extremely simple and straightforward manner. The system should then provide on-line tutorials, HELP, instructions, prompts, and the like to assist the user in conducting successful on-line searches.

3. The User-Cordial Interface

The interface program was developed on a TERAK 8510/a microcomputer. The programs are written in PASCAL and are stored on a floppy disk. A second floppy disk is used to store the TERAK operating system and the systems utilities.

The interface program links the user at the terminal with the Dartmouth College Computer and, via TELENET, with BRS. The program communicates between the user and BRS. It prompts the user for information and modifies the user responses to form BRS commands. It also modifies the BRS responses to make them more intelligible to the user.

The interface is command-driven; that is, there is a small set of commands or functions that the user may perform by instructing the system what to do. These commands may be executed in any order or sequence and may be repeated or not as desired. In addition, the user may ignore the interface provisions completely and access the data base via the standard BRS procedures and protocols while still within the interface program.

Figure 1 shows the message displayed at the time the system is ready for patron use. When this message appears, the log-on procedure has already been completed.

```
Welcome to the Dartmouth College Libraries On-Line!

The on-line data base now contains approximately 120000 citations
for materials processed since 1977.

Tell the system what you want to do by entering a command. Use the RED
key (it's in the lower right-hand corner of the keyboard) and one
letter to issue a command as follows:

Press the RED key followed by:
                        S: To start searching.
                        P: To list search results.
                        X: To get special list options.
                        D: To display search statements
                        E: To get explanations.
                        H: To get Help!  Attempts to provide assistance.
                        L: To logoff.
                        Q: To quit. (Stops the program and logs off.)

Then press the RETURN key.
```

FIGURE 1
THE INTERFACE OPENING MESSAGE AND COMMAND SET

Searching

The user now has the option of searching via the usual BRS protocols or via the interface. The interface search command (press the RED key followed by S) initiates the search procedure. A sample search session is shown in Figure 2. The user input is underlined.

```
Search type? A)uthor, T)itle, S)ubject, or O)ther: S
Search statement: CIVIL WAR
Checking terms...

Do you want to add more to your search statement? (Y or N):Y

Search type? A)uthor, T)itle, S)ubject, or O)ther: S
Search statement: LINCOLN AND ASSASSINATION
Checking terms...
Do you want to add more to your search statement? (Y ot N):N
(CIVIL WITH WAR).SU. AND (LINCOLN).SU. AND (ASSASSINATION).SU.

Do you want to execute this search? (Y or N):Y

Searching...

After the RESULT statement appears below, you can list the
items retrieved by pressing the RED key followed by P. Press
the RED key followed by X to get special list options.

    RESULT 5
    6_:
```

FIGURE 2
SAMPLE SEARCH SESSION

The interface search logic permits most user-supplied search statements to be entered in natural language order and form; that is, the interface allows for variation of input and supplies the necessary BRS search form.

The interface program scans the user-supplied search statement for words that are not searchable (i.e. words on the BRS stop-word list such as "of","the","for"); for words that are really logical operators (e.g. AND, OR, WITH, ADJ); and for marks of punctuation and other special characters that should not appear in the search statement. Marks of punctuation and multiple spaces are removed; the BRS operator WITH is supplied linking terms for which no other operator is supplied, and parentheses are added to group the search terms appropriately.

The user may perform combined author-title-subject searches. The "Other" search type allows the user to look for data virtually anywhere in the record.

In addition, once having executed a search whose result is too large, the user may narrow it by specifying the search number and a further qualifying term; e.g. 2 AND UNION. (This search might retrieve all items having CIVIL WAR in the subject field and UNION anywhere else in the citation).

Listing results

In order to list search results, the user must tell the system to begin by pressing the RED key followed by P (for print) or X (for special list options). The system will respond by asking the user which search results to list. The user then enters the number of the search result to be displayed.

The system will start displaying the retrieved citations one at a time using a standard format that includes the location, main entry, title, imprint, series statement, and subject. When it reaches the end of the first citation, it asks if the user wants to see the next one. Thus, the user may page through the search results quickly and easily. Figure 3 shows a sample request to list search results and some sample citations.

The interface also provides a special list option which allows more flexibility in displaying search results. The user may list the citations in groups, i.e. 1-10, 2-24, and has a choice of formats available ranging from title only to the full OCLC/MARC record. This special option also permits the user to save a copy of the retrieved citations for transfer to the Dartmouth Computer System.

```
Which search result do you want to list? 5
        1
LO KRESGE
    QC809-P5-W28.
TI Wave instabilities in space plasmas: proceedings of a symposium
    organized within the XIXth URSI General Assembly held in Helsinki,
    Finland, July 31-August 8, 1978 / edited by Peter J. Palmadesso and
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    TK7871-65-T76.
ME Trivelpiece, A W, 1931-.
TI Slow-wave propagation in plasma waveguides / AA. W. Trivelpiece.
IM San Francisco: San Francisco Press, 1967.
SU Electric waves.
Next? (Y or N):Y
       3
LO KRESGE
    QC718-5-W3-W44-1976.
ME Weiland, Jan.
TI Coherent nonlinear interaction of waves in plasmas / Jan Weiland and
  Hans Wilhelmsson.
IM New York: Pergamon Press, c1977.
SS International series in natural philosophy; v. 88.
SU Nonlinear theories.
Next? (Y or N):N
```

FIGURE 3
SAMPLE LIST OF SEARCH RESULTS

Other commands

In addition to the commands to conduct searches and list the results, the interface supports several other activities. These are display, explain, help, logoff, and quit.

The display command (press the RED key followed by D) allows the user to review previously executed searches as shown below:

```
1 (NEW WITH HAMPSHIRE OR VERMONT).SU.
RESULT 217

2 (SHAKESPEARE WITH WILLIAM).SU. AND (CRITICISM).TI.
RESULT 10

3 (ONCE).TI. AND (FUTURE WITH KING).TI.
RESULT 3

              **** END OF DISPLAY ****
```

The explain command is used to get on-line tutorials to assist in conducting on-line searches. When the user executes this command, the system responds with the following message:

```
The following topics may be EXPLAINed:
ADJ  AND  AUTHOR  BEGIN  BRS  COMBINE  DISPLAY  EXPLAIN  INTERFACE
LIMIT  LOGON  NUMBERS  OR  PARAGRAPH  PRINT  ROOT  QUALIFY
SAME  SEARCH  SPECIAL  SUBJECT  TITLE  TOPIC  TRUNCATION  WITH

Please type one of these topic names when the prompt appears:
```

The user may select one of these topics. The system will then respond with information about that aspect of on-line searching. The user may then select another topic and get another explanation.

If the user gets completely confused, the help command attempts to provide assistance. This message reviews the commands and tells the user how to get the explanations described above.

The logoff command clears the system and re-initializes it for the next user. The system responds with a message showing how long the user spent searching and asks for user comments.

Figure 4 shows the logoff procedure.

```
Thank you for using the Dartmouth College Library On-Line!

If you have comments or suggestions, please enter them now.
When you are finished, please press the RETURN key an extra
time.  No record of you or your use of the system is being kept.
:
:
Logging off...

CONNECT TIME:         0:05  HH:MM****

You are now logged off.  Please press the RETURN key.
```

FIGURE 4
INTERFACE LOGOFF PROCEDURE

The quit command signs off the system for the day and disconnects the user from BRS.

4. Conclusions

The On-Line Pilot Project has demonstrated the feasibility of using the OCLC transaction tapes to create an on-line catalog. It has demonstrated the utility of the BRS data base structure for loading this data and for on-line searching. It has also shown the feasibility of a user-cordial interface for patrons and staff and has provided an opportunity to test many factors involved in developing a successful system for use by students, faculty, and staff as well as trained on-line searchers.

Preliminary results from a series of controlled search experiments using the on-line catalog and the card catalog show that recall is similar. The on-line catalog is generally much more effective (and faster) for those topics not adequately represented by LC subject headings, but the card catalog may be more efficient for a very simple author/title search.

Further experiments with the on-line catalog at Dartmouth will continue, thus enabling us to decide whether it is an acceptable alternative to the card catalog. Our plan is to use both for at least one full calendar year, or until a clear choice is evident.

PURDUE UNIVERSITY inter office memorandum

To	M. Drake
From	L. Woods
Date	3-17-81
Subject	Machine Costs for Storage Retrieval System

1. Machine costs for System developed on shared 11/70

1.1 Development and file building (first year)

1.11	Connect Charges 2 11/70 lines @ $83/cm	2092
1.12	Line Charges 2 @ $40/mo	960
1.13	CP Hours 500 hours @ $54.40/hour	27200
1.14	I/O Units 300K units @ $.007/K unit	21
1.15	Permfile Storage 184K Track days at $.11/td	20275
		$50356

1.2	Terminals 2 CRTS at 1500 1 Prin[illegible] 00	$4000

1.3 Operating Costs (annual)

1.31	Connect Charges 2 11/70 lines @ $83/cm	2092
1.32	Line Charges 2 @ $40/mo	960
1.33	CP Hours 240 hours @ $54.40/hours	13056
1.34	I/O Units 300K Units @ $.007/K unit	21
1.35	Permfile Storage 365K track days at $.11/td	40150
		$56279

We currently incur only the $83/month line charge for use of the 11/70. Essentially we are treated like another student user. PUCC is considering revising this policy because of the quantity of resources we are requesting. We are assuming simular charges as those for internal usage of the CDC will be applied.

2. Machine Costs for
An LSI/II based system would cost around $30,000-35,000 to purchase. This figure includes the CPU, terminals, a printer, and 55.6 MB Winchester disk. Sample system attached has 3 terminals and a more expensive printer than we require. We would also probably use UNIX instead of RT-11.

3. Summary of hardware costs

1. Shared 11/70	$54,536 first year $56,279/year to operate
2. LSI/II purchased	$30-35,000 no comparable operating costs

28

PURDUE UNIVERSITY inter office memorandum

To M. Drake
From L. Woods LAW
Date 2-24-81
Subject Warehouse Retrieval

According to our information, the first group of material to be transferred into the compact storage will be the material now stored in the 9th Street Warehouse. When that has been settled, the material from the South Attic in Stewart Center will be added. Finally material will be transferred from the School and Departmental Libraries and from other peripheral storage locations. We are assuming that the Warehouse materials may be shifted as early as March, 1982 and the Attic material by the end of 1982. We have no time-table for the shifting of the other material.

The Warehouse material is primarily old runs of serials consisting of about 3000 titles and up to 200,000 volumes. The Attic contains a mix titles and up to 220,000 volumes there. We have no figures for School and Departmental materials.

A summary of our resource requirements is:

Programming:	22 Man-months
Storage:	11.5 Megabytes by Oct. 1982 27 Megabytes by Jan. 1983 57 Megabytes by June 1983
Hardware:	2 CRTS (dumb terminals) 2 Hardwired Ports 1 Page printer

cc D Moses
cc C Snow

The system configuration for the retrieval system will include two main data files, one including bibliographic information and one including item and location information. Several index files will be required for access. Access will be provided through two hard-wired CRT terminals. At least one of these should have a page printer attached.

1. Files

1.1 Bibliographic Files
This file will contain a brief bibliographic record for each unique title in storage. The record will consist of author, title, inprint and call number. It can be up to 300 characters in length.

1.2 Item File
Each physical item in storage will have a record in the item file. It will be a fixed length record around 50 characters long, consisting of a pointer to the bibliographic record, volume description, ownership of the item, and a location number consisting of section, range, stack and shelf where the item is stored.

1.3 Inverted Indexes
An index file will be maintained for each on-line access point required. We are anticipating short title, author/title, and call number files will be maintained.

2. Hardware Requirements

2.1 Storage-57 Megabytes

2.11 Software
We will allocate 100,000 bytes for file building and retrieval software.

2.12 Warehouse
The warehouse items will require approx. 11.5 megabytes of file space.

2.13 Attic
The attic items will require approx. 15.5 megabytes of file space.

2.14 School & Departmental Libraries
The peripheral storage items and weeding from S&D libraries may require another 30 megabytes of storage assuming up to 250,000 volumes.

2.2 Hard-wired Ports
It is our experience that dial-up access does not work for continuing operations. At least two hard wired ports should be guaranteed.

2.3 CRTS
The CRT terminals can be the non-intelligent type since the display can be kept simple.

2.4 **Page Printer**
An inexpensive page printer attached to one of the terminals will preclude transcribing location numbers for the person doing the actual retrieval from storage area.

3. Design and Programming-22 Man-months

3.1 File Design
We need three man--months to complete and test file design.

3.2 Bibliographic File
We need five man--months to program and debug the bibliographic input and file building routines.

3.3 Item File
We need three man--months to program and debug the item file input and file building routine.

3.4 Retrieval
We need eleven man--months to program and debug the retrieval & update routines and complete documentation of the system.

4. File building and data input (Warehouse only)

4.1 Bibliographic File
Six man--months will be required to build the bibliographic file. It can be built from the shelf list before the items are actually moved. We can use existing MARC records to derive data for up to 1/3 of the file. We need to address the question of correct bibliographic information for serials titles not yet converted.

4.2 Item File
Six man--months will be required to build the item file. It should be built after the items are actually in place in the compact storage area.

4.3 Index Files
The index files will be built by a program and will require two man--months to complete. They must be built after the bibliographic and item files are in place.

SHELVING SPACE - ATTIC JUNE 1980

CALL NO.	(x 17.5) SECTIONS	EMPTY	FULL	TOTAL	% FULL
000	124.5	510	1668.75	2178.75	77
100	9.5	3	163.25	166.25	98
200	5	20	67.5	87.5	77
300	150	420	2205	2625	84
400	32	105	455	560	81
500	154	495	2200	2695	82
600	256	830	3560	4480	81
700	28	150	340	490	69
800	30	115	410	525	78
900	70	165	1060	1225	87
Doc	247	200	4122.5	4322.5	95
FOLIO	52	20	448	468	96
THESES	60	70	980	1050	93
SPEC.COLL	20	185	165	350	47
U.N.DOCS	10	55	120	175	69
TOTAL	1245	3343	17965	21398	84

SHELVING SPACE - WAREHOUSE JUNE 1980

CALL NO.	(x 18) SECTIONS	EMPTY	FULL	TOTAL	% FULL
500 (STRINGERS)		195	2505	2700	93
500 (SECTIONS)	51	0	918	918	100
600	750	2583	10917	13500	80
TOTAL	801 + STRINGERS	2778	14340	17118	84

RESEARCH ON THE IMPACT OF A COMPUTERIZED CIRCULATION SYSTEM ON THE PERFORMANCE OF A LARGE COLLEGE LIBRARY

PART ONE: THE MAIN LIBRARY

Report on National Science Foundation Grant No. IST 78-10821
for the Period September 15, 1978--June 1, 1980

April, 1981

Prepared by

Katherine A. Frohmberg
William A. Moffett

Oberlin College Library
Oberlin, Ohio

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Any opinions, findings, conclusions or recommendation expressed in this publication are those of the authors and do not necessarily reflect the views of the National Science Foundation.

TABLE OF CONTENTS

Page

1 Preface and Acknowledgements 1

2 Introduction 4
  - Background
  - Availability
  - User Satisfaction/Frustration
  - Building Use
  - Surveys

INCLUDED IN KIT

3 Description of Automated Circulation System 10
  - System History
  - System Description
  - System Organization
  - Management Reports

4 Project Hypotheses 27

5 Data Gathering Methods 31
  - Availability
  - Activity
  - Attitude
  - Log Data

6 Techniques of Data Analysis 50
  - Statistical Modelling in the Social Sciences
  - Key Variables
  - Models Used
  - Recovery Ratio
  - Interval type variables
  - Data Analysis
  - Goodness of Fit
  - Standard Error
  - Time variable

7 Analysis of System State and Objective Data 61

A. System State Variables 61
  - Fraction of Collection Barcoded
  - Fraction of transactions which are barcoded
  - Checkout time

B. Objective Data on Library Service 64

1. Indicators of the Volume of Service Rendered
   Hours of library and material use
   Accessibility
   Circulations as a measure of use
   Total visits as a measure of use

2. Measures of the quality of service
   Circulation component of availability
   Library performance component of availability
   Modelling Availability

C. Summary of Chapter 7

8 Analysis of Attitude Data 73
Derivation of attitude variables
The K* model
Recovery ratio r
System State and Attitude
Summary of Chapter 8

9 Conclusions 85

References and bibliography 88

CHAPTER 3

DESCRIPTION OF AUTOMATED CIRCULATION SYSTEM

System History

The manual circulation system in use at Oberlin College until 1975 was a traditional card system. Two pocket cards were signed by the patron with name, ID, and campus mailbox number. One card was filed by the date the book was due and the other by the call number. Oberlin has a semester loan period. In addition to the call number and date due files, there were many supplementary files for materials in special status, (bindery, missing, etc.). In 1974 the Assistant Director of the Library, H. Olsen, identified some 26 separate files in the Circulation Department. The next year, in order to simplify the system, the double pocket card system was dropped and a single pocket card system was implemented, also organized by date due. As a result of this change, several files might still need to be searched to discover the status of a particular book.

To determine whether the manual system could be salvaged or, indeed, whether an automated circulation system would solve the perceived problems, Herbert F. Johnson commissioned Ringgold Management Systems to study the circulation problems at Oberlin College. In October 1976, Mr. Shoffner, vice-president of Ringgold, recommended that Oberlin College purchase the circulation system installed at Bucknell University in Lewisburg, Pennsylvania. The significant factor involved in this recommendation was its implementation on the same computer used at Oberlin College, a Xerox Sigma 9.

At the same time there were important features of the Bucknell system which would have to be modified for Oberlin's needs. For example, the

Bucknell circulation system was based on punched cards. The programs were written in Fortran and used the database manager known as DMS, which was developed by Xerox. Further, the Bucknell libraries had converted their 250,000 volume shelf list to machine-readable form and had it available on-line. Therefore, every book entered into the system had an automatic verification of the existence of the call number-- an important means of eliminating errors. Finally, Bucknell's system did not handle branch libraries and had limited reserve book room capabilities.

These modifications were begun by Mr. Shoffner of Ringgold Management Systems. Early in the system's development the Oberlin College Computer Center modified the program for barcoded labels; enabled the system to accomodate branch libraries; and designed and programmed a microcomputer interface. In subsequent years, the Computing Center would considerably improve and enhance the system by a number of other modifications--a vital contribution to the success of its implementation.

Since Oberlin had 850,000 volumes in its collection in 1976 it was not thought feasible to create an on-line shelflist. Therefore, the system was designed to be a transaction system, not an inventory system. In other words, once the charge/discharge cycle was complete, the information would be deleted from the data base. Moreover, with a transaction system, the complete machine-readable record must be physically on the book, so that author/title and call number bar labels had to be produced and affixed to each book. The awkwardness and expense of this last requirement was later eliminated by implementing an archiving capability which allowed the dropping of author and title labels on the book. Books barcoded since March 1980 have only call number labels.

There were significant retrospective barcoding efforts while the system was being modified and installed. Between Summer 1978 and the end of 1980, about 20,000 volumes were barcoded in the Art Library, 120,000 volumes in the Main Library, and 22,000 monographs and 50,000 scores in the Conservatory of Music Library. As of this writing (Spring 1981) 80% of the books circulating in the Main Library are barcoded.

Before March 1980, when author/title labels had to be produced and affixed to the book, barcoding costs stood at about 50¢ per volume. After March 1980, any book in the Library of Congress classification scheme costs about 19¢ per book to label. Books in the Dewey Decimal classification are more difficult to label and, since March 1980, costs average about 27¢ per book.

In November 1978 the system was installed and began operation. For the full academic year of 1978-79 the manual pocket card systems were kept as a backup to the automated circulation system. By late Summer 1979 when the system was sufficiently stable and it was felt enough materials were barcoded, the manual backup was dropped. Since then, with further refinement, the system has proved to be admirably suited for the circulation needs of the Oberlin College Libraries.

System Description

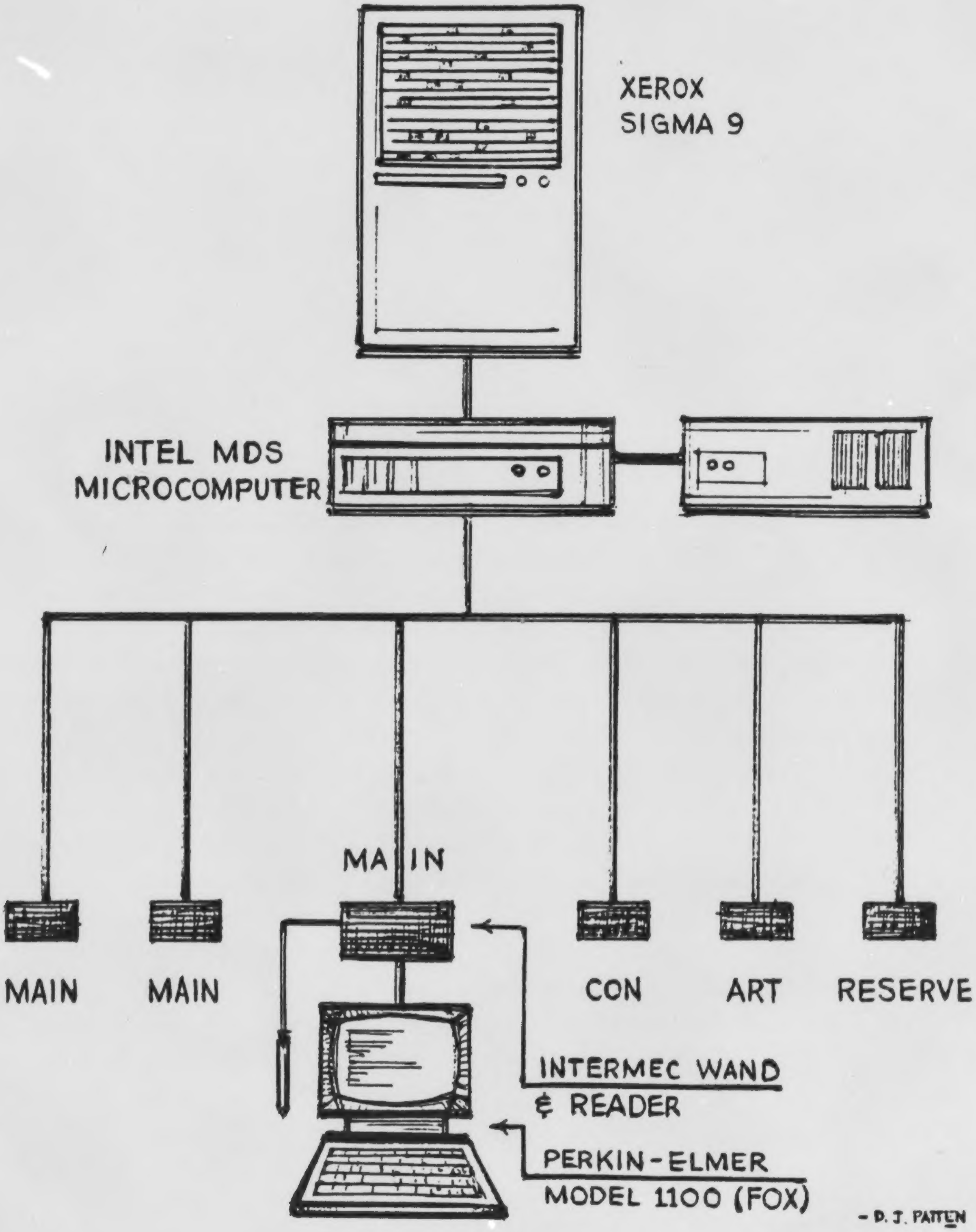
The machine-readable inputs to the circulation system are variable length, alphanumeric, Intermec Code 39 barcode labels. One or two labels contain the base call number for the title and an extension which distinguishes different physical manifestations of the same title (e.g. copy or volume). These labels are placed on both the inside and outside back cover of the book. The outer labels permit staff to discharge books without opening them. The labels are overlaid with mylar tape to protect them from wear.

Figure 3.1 shows the configuration of the system. The Xerox Sigma 9 uses the CP-V operating system, has 128 K words of core memory and uses 6 disc drives of 80 megabyte capacity each. The circulation system is allocated 8,000 granules (approximately 16 million characters) of on-line storage.

The Intel MDS microcomputer uses a 64,000 byte core memory, ISIS II operating system, and 2 floppy diskettes of ½ megabyte capacity each for logging of transactions when the Sigma is unavailable. The Perkin-Elmer model 1100 terminals contain a cathode ray tube display plus a full keyboard. Intermec model 1232 wands and readers are used to convert the barcode labels into a digital signal.

Figure 3.1

— SYSTEM CONFIGURATION —


XEROX
SIGMA 9
INTEL MDS
MICROCOMPUTER
MAIN
MAIN
MAIN
CON
ART
RESERVE
INTERMEC WAND
& READER
PERKIN-ELMER
MODEL 1100 (FOX)
- D. J. PATTEN

As mentioned before, the on-line circulation database itself resides on the Xerox Sigma 9. In addition, the Sigma houses patron validity files, statistical report programs, error checking, etc. The microcomputer, however, also plays a significant role in operation of the system:

- The micro identifies terminal and branch location in order that an operator need not enter branch location codes.
- It automatically assigns the loan period for the majority of borrower categories.
- It formats transactions to the Sigma by computing check digits and concatenating barcode labels.
- It does some prompting of the system operators.
- The micro acts as a multiplexer in that it manages six terminals on one line.
- The micro allows logging of transactions when the Sigma mainframe is not available.
- The micro times various functions for statistical purposes.

There are two types of commands available on the microcomputer, "%" function and "F" functions, so characterized because of prefix symbols. *Percent functions*, an alphabetic code prefixed by %, change the status of the microcomputer; they do not affect the database resident on the Sigma. For example, %SEND is used to transmit messages to other terminals and %UNWIND begins the procedure for sending logged transactions to the Sigma for updating the database.

"F" *functions* (two alphabetic characters, the first of which is always F) cover the most common tasks required of an on-line circulation system (Figure 3.2). They are *charge* and *discharge*, *query by call number*, *transfer*, *delete*, and *place a hold*. In addition, books may also be allocated to reserve with an "F" function. For "F" functions, books are simply wanded into the database and the micro performs the various functions outlined above: computing check digits, concatenating labels, etc.

There are other functions, of course, which must be accommodated in a circulation system; maintenance of the patron file, to cite a single example.

Figure 3.2

"F" FUNCTIONS

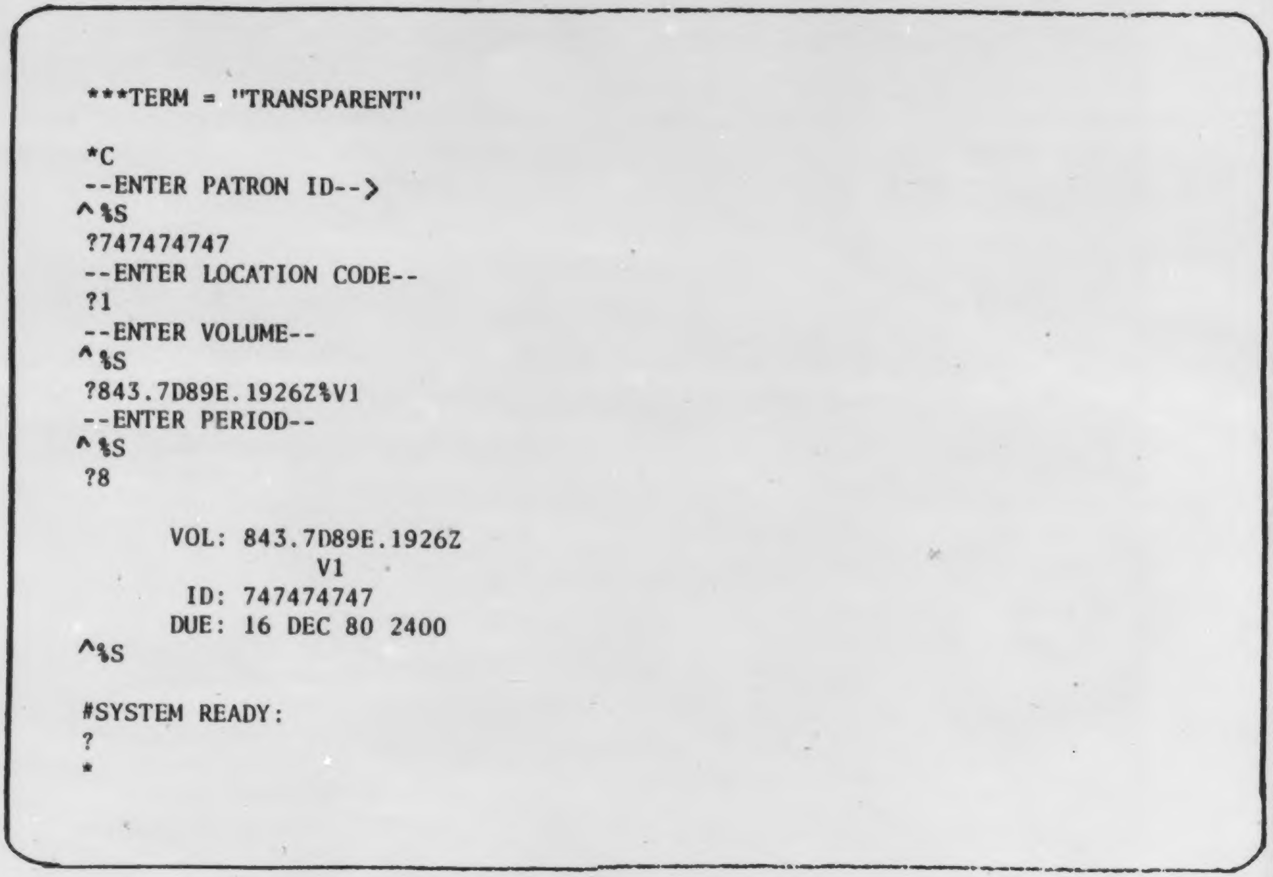
FS	SHORT CHARGE
FL	LONG CHARGE (REQUIRES AUTHOR/TITLE)
FD	DISCHARGE
FV	QUERY BY CALL NUMBER
FA	LONG RESERVE ALLOCATE (REQUIRES AUTHOR/TITLE)
FB	SHORT RESERVE ALLOCATE
FT	TRANSFER TO ANOTHER BRANCH
FW	WITHDRAW OR DELETE
FH	PLACE A HOLD

Functions which are not frequently performed, or which require access to confidential information, are accomplished by using yet another mode on the microcomputer, *transparent*. In transparent mode, the operator is communicating directly with the main circulation system program, which is resident on the Xerox Sigma 9. In transparent mode, such very important functions as *maintenance of the hold file, searching by author/title, and query on patrons* may be done, as well as *lock-outs* on delinquent patrons.

The interaction between the computer and the operator is considerably more conversational in transparent mode than in regular mode. The microcomputer is not operating on such transactions at all. As a result, such data as status and location of books must be entered manually by the operator, something that is not required in regular mode. Furthermore, labels may not be wanded in transparent because check digits and label identifiers are not removed. (Figures 3.3 and 3.4 illustrate examples of charging books in regular and in transparent mode. As can be seen from Figure 3.4, transparent charging requires input of location, loan periods, etc.)

The last major mode of the microcomputer is called *off-line*. The micro times every transaction it sends to the Sigma and if no response is received after 3 minutes, the microcomputer severs communication with the Sigma and logs the transaction on the floppy diskettes. Until the operator tries to bring the system on-line, the micro will log transactions on the diskettes. This is very valuable when the Sigma crashes and when response is very slow. When the Sigma subsequently does become available, transactions are unwound to the on-line database and any problems with patron validity, volumes already active, etc. are written on paper output by an Anderson-Jacobson model 860 console typewriter.

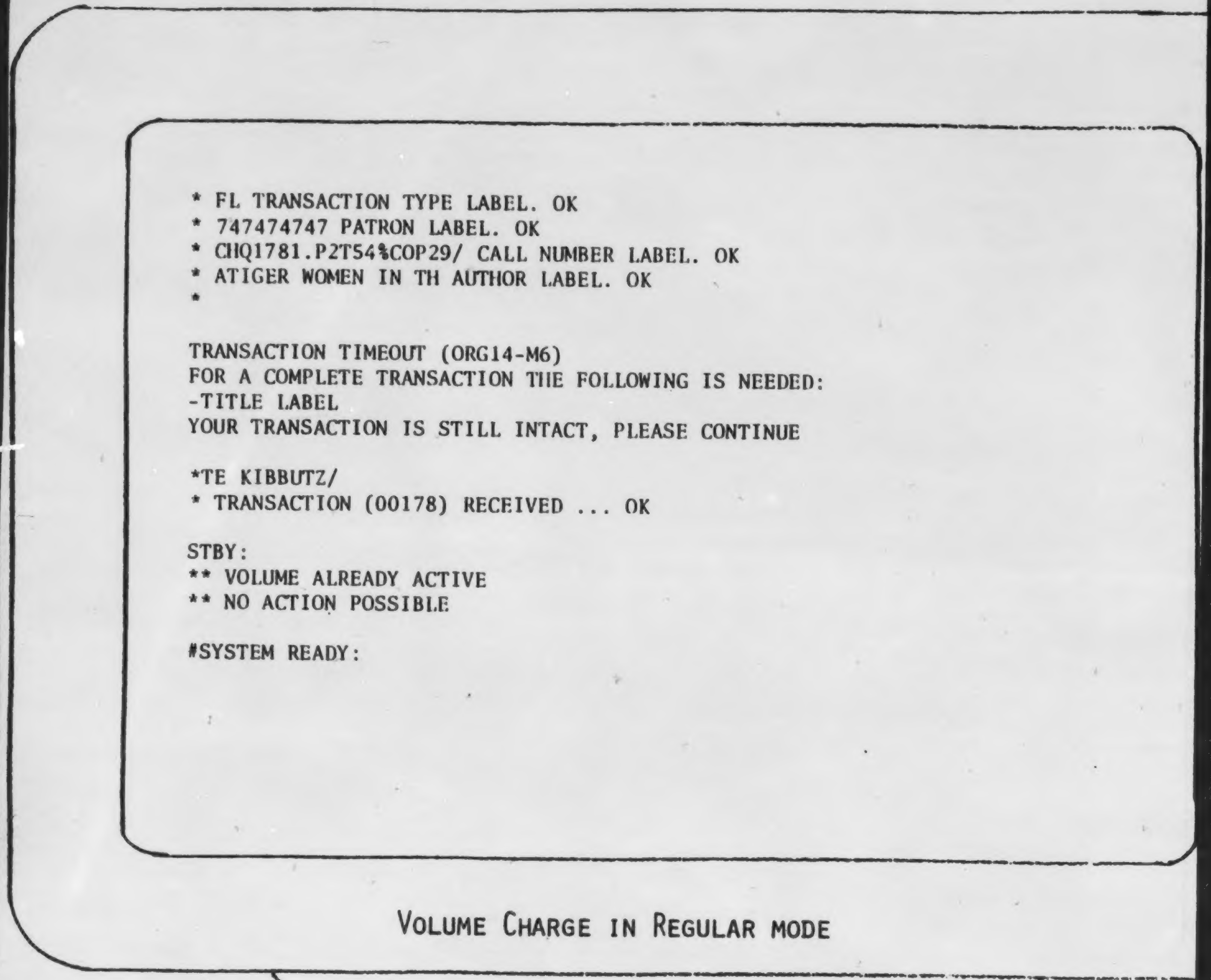
In order that the Oberlin College circulation system may be compared with other commercially available systems, note the chart shown in Figure 3.5 which is extracted in part from Matthews, (1980). Using this chart the features of the major stand-alone and distributed systems may be compared with the features of the Oberlin system.



```
***TERM = "TRANSPARENT"

*C
--ENTER PATRON ID-->
^%S
?747474747
--ENTER LOCATION CODE--
?1
--ENTER VOLUME--
^%S
?843.7D89E.1926Z%V1
--ENTER PERIOD--
^%S
?8

      VOL: 843.7D89E.1926Z
                V1
       ID: 747474747
      DUE: 16 DEC 80 2400
^%S

#SYSTEM READY:
?
*
```

VOLUME CHARGE IN TRANSPARENT

Figure 3.3



```
* FL TRANSACTION TYPE LABEL. OK
* 747474747 PATRON LABEL. OK
* CHQ1781.P2T54%COP29/ CALL NUMBER LABEL. OK
* ATIGER WOMEN IN TH AUTHOR LABEL. OK
*

TRANSACTION TIMEOUT (ORG14-M6)
FOR A COMPLETE TRANSACTION THE FOLLOWING IS NEEDED:
-TITLE LABEL
YOUR TRANSACTION IS STILL INTACT, PLEASE CONTINUE

*TE KIBBUTZ/
* TRANSACTION (00178) RECEIVED ... OK

STBY:
** VOLUME ALREADY ACTIVE
** NO ACTION POSSIBLE

#SYSTEM READY:
```

VOLUME CHARGE IN REGULAR MODE

Figure 3.4

	STAND-ALONE ONLINE SYSTEMS								DISTRIBUTED ONLINE SYSTEM
	Cincinnati Electronics CLASSIC	CL Systems LIBS 100 Rel 24	DataPhase Systems ALIS	GEAC	Oberlin College	Plessey Module 4	Systems Control SCICON	Universal Lib. Systems ULISYS	Gaylord Library Systems
Circulation Functions									
Check Out	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Renewals	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Check In	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fines & Fine Accounting	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Holds (title)	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Holds (particular copy)	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes
Reserve Book Room (Acad. Library)	Yes	Yes	Yes	Yes	Partial	No	No	Yes	Yes (partial)
Recall items with notices	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Patron Notices	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Reports									
• Patron Registration	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
• Circulation Statistics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
• Collection Management	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Data Entry									
• Magnetic Tape									
· OCLC Tape Interface	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
· Tapes from other sources	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
• Manual Key Entry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
• Verify presence of data in mandatory fields at time of data entry?	No	Yes	No*	Yes	Yes	Yes	No	Yes	No
Prompts									
• More than one level of prompts	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No
• Help command	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No
• Provide for statutory holidays, days and hours library closed?	Yes	No	Yes	Yes	No	Yes	Yes	Yes	No
Other Functions									
On-Line Catalog									
• Subject Access	Yes	Yes	Yes	Yes	No	No	No	Yes	No
• Authority File	Yes	No	No	No	No	No	No	Yes	No
Acquisitions									
• Vendor Statistics	Yes	No	No	No	No	No	No	No	No
• Fund Accounting	Yes	No	No	No	No	No	No	No	No
• Lists of Vendor Data	Yes	No	No	No	No	No	No	No	No
• Status Reports, Claims Notices	Yes	No	No	No	No	No	No	No	No
• General Statistical Reports	Yes	No	No	No	No	No	No	No	No
Spine & Label Printing	Yes	No	Yes	No	No	Yes	No	Yes	No
Mail box (message routing)									
• Console to terminal messages	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
• Terminal to terminal messages	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No
On-Line Communications Interface									
• To Book Jobber	No	Yes	No	No	No	No	No	No	No
• To Bibliographic Utility	No	Yes	Yes	No	No	No	No	No	No
• To Another Cir. System (different vendor)	No	No	No	No	No	No	No	No	No
• To On-Line Search Systems	No	No	No	No	No	No	No	No	No
Word Processing	Yes	No	No	Yes	No	No	No	Yes	No
Output Tape of Records	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Community Resource Data Base	No	No	No	No	No	No	No	No	No

*Override

Figure 3.5 continued

	STAND-ALONE ONLINE SYSTEMS								DISTRIBUTED ONLINE SYSTEM
	Cincinnati Electronics CLASSIC	CL Systems LIBS 100 Rel 24	DataPhase Systems ALIS	GEAC	Oberlin College	Plessey Module 4	Systems Control SCICON	Universal Lib. Systems ULISYS	Gaylord Library Systems
Patron Notices									
Flexibility in formating notice	Yes	Yes	Yes	Yes*	Yes	No	Yes	Yes	No
Flexibility in choice of wording	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Accommodate foreign languages	Yes	Yes	Yes	No	No	No	Yes	Yes	No
Notices									
Overdue Fine Notices	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Final Notice (bill)	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No
Recall Notice	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Hold Notice	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Hold Cancellation Notice	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No
General Announcement Notices	Yes	No	No	No	No	No	No	Yes	No
Management Reports									
Reports by branch	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Monthly system totals	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-to-date system totals	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Percentages Calculated	Yes	No	No	No	No	No	Yes	Yes	Yes
Patron Registration Reports									
New & renewal reg. by patron type	Yes	No	Yes	No	Yes	No	Yes	Yes	No
New & renewal reg. by residence code	Yes	No	Yes	No	No	Yes	Yes	Yes	No
Patron List	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Programmability by Library	Yes	No	Yes	Yes	No	No	Yes	Yes	No
Circulation Reports									
Circ. by Material Type	Yes	Yes	Yes	Yes	Partial	Yes	Yes	Yes	Yes
Circ. by Call # groups	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Circ. by patron type	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Circ. by patron geographic location	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Circ. by time of day/ and/or by terminal	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Circ. by reciprocal borrowing class	Yes	Yes	Yes	No	No	Yes	·	·	Yes
Circ. by high frequency items	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Missing items	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Items on loan to another agency	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
Purchase Alert Report (items with holds over X)	Yes	Yes	Yes	Yes**	Yes	No	Yes	Yes	Yes
List of current holds	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# holds placed, trapped & cancelled	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes
Hold Shelf List	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Shelf Clearance Report (overdue items)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Overdue items by material type	Yes	No	No	No	Partial	No	No	No	No
# overdue notices & bill sent	Yes	No	No	Yes	No	No	Yes	No	Yes

*Limited

**No Threshold

Figure 3.5 continued

	STAND-ALONE ONLINE SYSTEMS								DISTRIBUTED ONLINE SYSTEM
	Cincinnati Electronics CLASSIC	CL Systems LIBS 100 Rel 24	DataPhase Systems ALIS	GEAC	Oberlin College	Plessey Module 4	Systems Control SCICON	Universal Lib. Systems ULISYS	Gaylord Library Systems
Reserve Book Room Circ. Reports									
Circ. by course name, # & section	Yes	Yes	No	Yes	Yes	No	No	Yes	No
Circ. by instructor	Yes	Yes	Yes	Yes	No	No	No	Yes	No
Circ. by reserve item	Yes	Yes	Yes	Yes	No	No	No	Yes	No
Total time item checked out	Yes	Yes	No	No	No	No	No	Yes	No
Average time per reserve circ.	Yes	No	No	No	No	No	No	Yes	No
Reserve Course Directory	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No
Fine Accounting									
Fines collected	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes
Fines forgiven (by operator)	Yes	No	Yes	No	No	Yes	Yes	Yes	Yes
Patrons with fines in excess of $X	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Fine Receipts	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Total Dollars of Outstanding Fines	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes
Collection Management Reports									
Items added/withdrawn report	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Items added/withdrawn by type of material (by branch)	Yes	No	Yes	No	No	No	Yes	Yes	Yes
Inventory Control Report	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No
# titles & copies owned (by branch)	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Titles-system copies-branch
Inactive Report (low or no circ. items by call # or author sequence	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
ILL Report (requests filled, items received, items returned)	Yes	No	No	No	No	Yes	Yes	Yes	Yes

System Organization

The circulation program resident on the Sigma 9 uses a CODASYL style database manager. The programs purchased from Bucknell were implemented using DMS but were upgraded at Oberlin to EDMS, Xerox's latest release of the database manager.

Figure 3.6 displays the various groups and fields around which the database is organized. EDMS defines relationships between the groups listed which then determine the structure of the on-line links (pointers).

There are no variable length records on this system. For circulation purposes, an abbreviated author/title record has been adequate. However, the character limit of 28 for call number and 12 for extension has proven to be inadequate. Musical scores classed in the Dewey system have very long call numbers and some portion of the Conservatory score collection (less than 1%) had call numbers or extensions too long to enter. At some point we will be redefining the database to accommodate these longer call numbers.

The microcomputer has been programmed with a high-level language known as PLM-80. The circulation program operates in a 'repeat forever' loop, cycling through each terminal in turn and processing messages through use of interrupts. Thus the micro is able to simulate time sharing.

Management Reports

Statistics and Management reports for the circulation system are generated through two means: the on-line database itself and the journal record. The journal is used to provide a chronological record of system activity so that it may be restored at any point in the day from a fatal error in the database. The database is copied to tape every night and the journal is used to bring the system up-to-date at any point during the day.

There are some 26 types of journal records. Figure 3.7 is an example for a simple charge. Journal records range from charges and discharges to records for patron updates and holds which have been cancelled by Reserve. In this particular journal record, everything required to simulate the charge at the time it occurred must be recorded. Thus, the record must include:

Column	Name
1	Identifies transaction as a charge
3	Location (Main, Art or Conservatory)
4	Unwound or on-line transaction
5	Circulation type (Reserve or Regular)
6-15	Date and time
16-43	Call Number
44-55	Extension
56-64	Patron's ID number
65	Loan period (2 weeks, 4 weeks, semester, etc.)
66	Patron status (undergraduate, staff, town, etc.)
67	Charge type (wand with author/title, wand without author/title, keyed)

The journal record is the means by which most research into library collection analysis and circulation of library collections is accomplished (Kent, 1978). Similarly, Oberlin uses the journal record to produce the following reports:

A. Daily statistics. This series of reports is generated from the journal record and from the on-line database. Components include:

- Recall and overdue notices
- Tallies of various types of transactions
- Charges by patron types
- Charges by loan period
- Keyed vs. wanded charges (a measure of what proportion is in machine-readable form)
- Charges by call number schema

The statistics reports are prepared for each branch library plus a summary report for the system as a whole.

B. Recall Response Report. This report allows us to measure the delay between the sending of a recall notice and the return of the book for each class of patrons. It has allowed us to observe changing response to the recall service as it has been introduced. It will allow us to measure the effectiveness of changes in recall response as we vary wording of notices, timing of notices, etc.

C. Item Activity Report. This report is a variation of the "purchase alert" report available on many commercial circulation systems. A Library

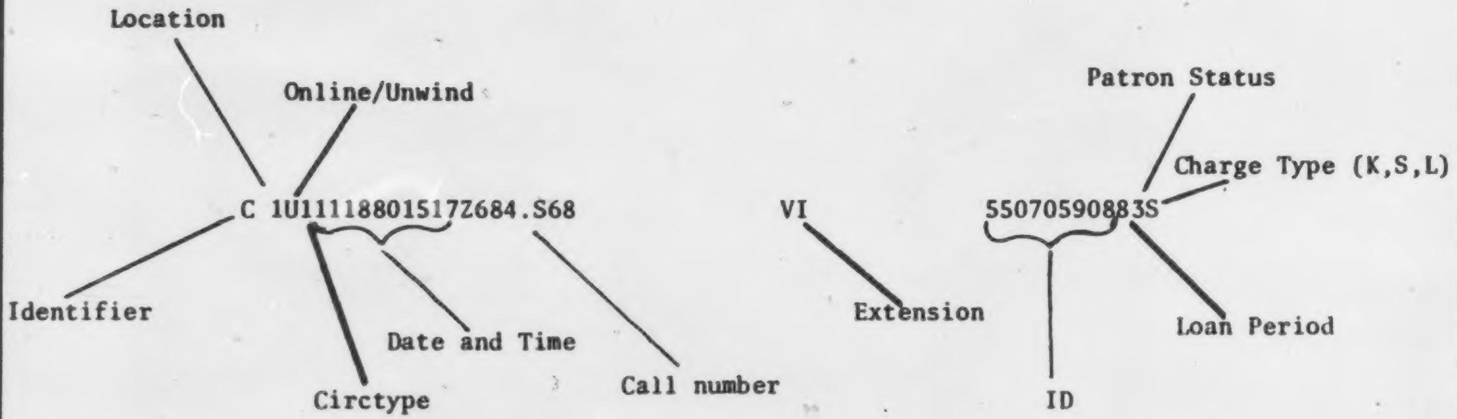
Figure 3.6

Oberlin College
Library Circulation Database Fields

Group	Field	Description	Field Type
PATRON			
	ID	9 Digit Patron ID Number	Binary
	PRTNNAME	Patron name	24 Char
	INDATE	YY/MM/DD patron entered system	Binary
	STATUS	Patron type (student, staff, etc.)	1 Char
	ADDRESS	Patron mailing address	40 Char
ATINDEX			
	KEYATX	3 Char of Author, 3 Char of Title	6 Char
	HITCNT	Number of times this group occurs	Binary
VINCIRC			
	CALL NO	Volume Call Number (LC or Dewey)	28 Char
	AUTHOR	Volume's Author	40 Char
	TITLE	Volume's Title	56 Char
CALLEXT			
	LCNOEXT	Call Number Extension for books	12 Char
	LINKCURR	ID of patron to whom book is charged	Binary
	OUTDATE	YY/MM/DD book was charged to LINKCURR	Binary
	DUEDATE	YY/MM/DD book is due	Binary
	PERIOD	Loan period is due	Binary
	HOLD	5 Patron IDs of people requesting book	Binary
	OWNER	Branch number of book's home	Binary
	LOCATION	Branch from which book currently circulates	Binary
	CIRCTYPE	Circulation Category	Binary
	COURSE	Course for which Reserve book is used	Binary

Figure 3.7

JOURNAL RECORD CREATED FOR CHARGE


Location
Online/Unwind
Patron Status
Charge Type (K,S,L)
C 1U11118801517Z684.S68
VI
55070590883S
Identifier
Extension
Loan Period
Date and Time
Call number
Circtype
ID

defined combination of charges, holds and queries is used to scan all circulations for a semester. Books which match that criteria are output on the report. The combination of holds, queries, and charges may be varied from run to run and allows us to determine a threshhold level of book activity for various subject areas.

DRAFT COPY

MICROCOMPUTERS:

BASIC CONCEPTS FOR THEIR UTILIZATION IN A HEALTH SCIENCES LIBRARY

MLA 1981 Annual Meeting
Concurrent Sessions

John C. Blair, Jr.
Computer Applications Librarian
Texas A&M Medical Sciences Library

57

MINICOMPUTERS, MICROCOMPUTERS, AND THE LIBRARY

The basic function of a computer is to compute numbers. It does this at high speed. It repeats complicated sequences at the touch of a button that would be exceedingly tedious to most human operators. Financial institutions, such as insurance companies and banks, benefit greatly from the computational abilities of a computer. The armed forces, who had the first ENIAC computer designed in the 40's, are also prime users of the mathematical routines performed by large mainframe machines. NASA and the Jet Propulsion Laboratory are very visible consumers of computing power in the area of space exploration.

In contrast, the key to the utility of the minicomputer or microcomputer is not its computational ability per se in a library, but its ability to handle large amounts of text files. To handle text-oriented files, including ordering or acquisitons systems, the critical aspect of a computer is its input/output capabilites. Input/output is accomplished with peripherals and multi processors. The peripherals include such critical functions as storage and retrieval of data on tape or disk. The multi processors enable processing tasks to be carried on virtually simultaneously and handle more than one program routine at a time. The real buzz word is the prefix "multi" for processors and "mega" for millions of characters of storage.

A Request For Proposal should delineate both the applications in the library to which the computer is to be put and the specific types of equipment thought necessary to carry out those applications.

Rough layout for slide

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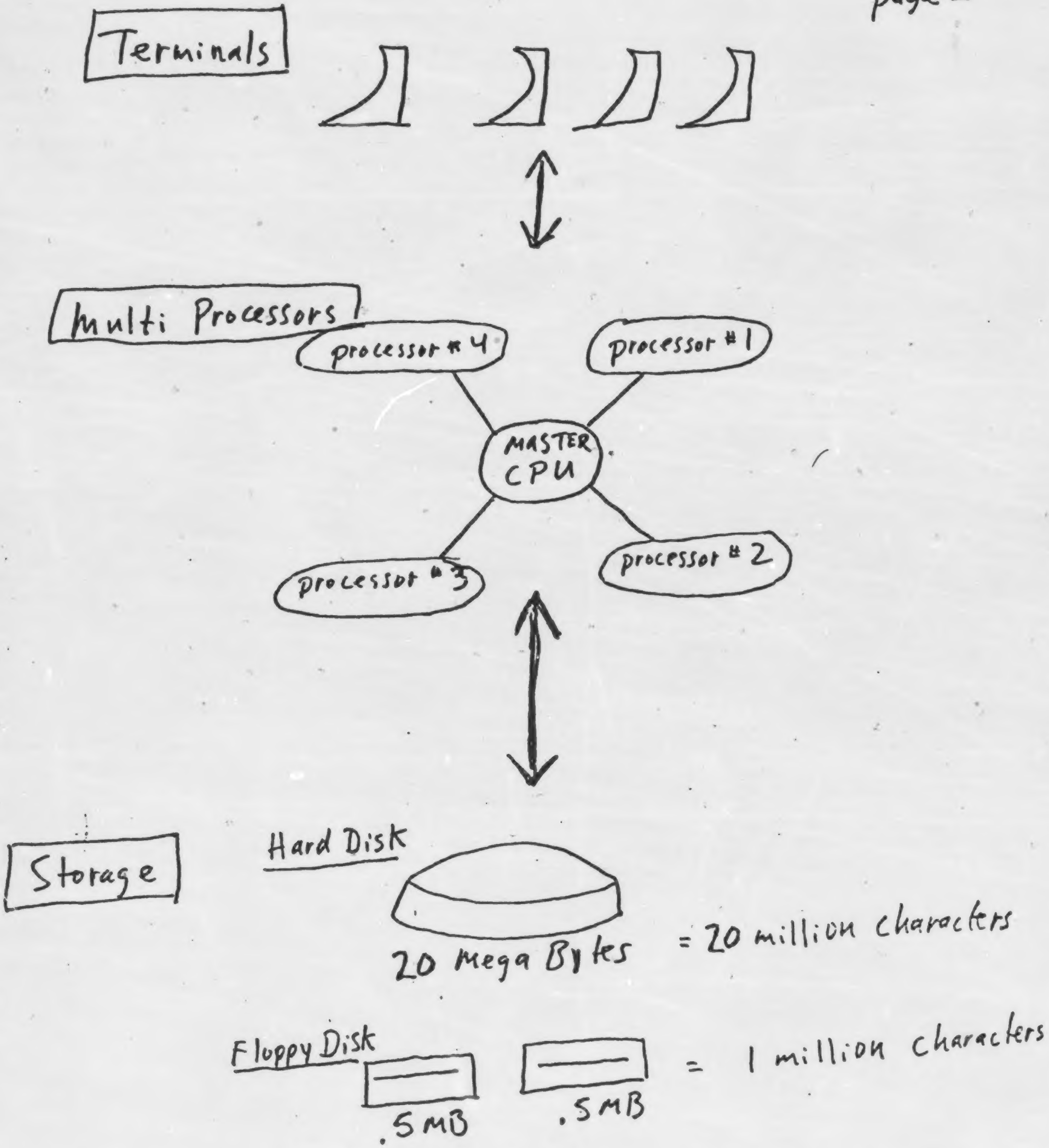
for
page 2


Terminals
Multi Processors
processor #4
processor #1
MASTER CPU
processor #3
processor #2
Storage
Hard Disk
20 Mega Bytes
= 20 million characters
Floppy Disk
.5 MB
.5 MB
= 1 million characters

CRITICAL CONSIDERATIONS

There are certain considerations germane to the operations of most libraries that are not always understood by computer vendors. One of them which should be carefully described in the specifications is that of communications protocols. Most minicomputer and microcomputer companies do not emphasize the ability of their machine to handle more than three or four terminals for accessing the stored programs. Even those machines that do have multiple ports for simultaneous access by different terminals often configure this access in sets that start with four, then eight, and sometimes not more than sixteen terminals at the same time. Of course, depending on the application, eight or sixteen simlutaneous access ports is quite a respectable number for in-house library use.

Another area that is critical to the success of library operations is that of adequate storage. Floppy or flexible disks, for instance, are readily available on most microcomputer systems, but have limited storage capability. Hard disks are probably necessary for library operations in order to have adequate room for the expanding data. A megabyte refers to one million characters and 10 Mega Bytes is probably minimal for just one portion of a library program. Hard disk drives that handle 25 million characters are more realistic initial configurations with backup in the form of dual 8" floppy disks or a tape cartridge. Such a system would start at around $20,000 for a four user multi terminal multi task machine. This figure would not include maintenance or software.

Another critical factor is that of the operating system under which software programs are run and input/output handled. A program must be compatible with the operating system of the machine. Certain pre-packaged programs will run only on machines with a specific operating system which, in turn, may require a specific type of processor, such as 16 bit for the UNIX/MUMPS/MIIS

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page 3

COBOL

accounting and business transactions

FORTRAN

scientific applications – molecular modeling

BASIC

interactive handling of text strings
– especially for "all purpose" microcomputers

PL/1

large database search and retrieval

PASCAL

innovative applications – relatively new

PROGRAMMING LANGUAGES AND APPLICATIONS SOFTWARE

A Request For Proposal should specify what programming languages have to be supported and what off-the-shelf applications programs are desirable. Many universities have an abundance of COBOL-trained programmers whose expertise lies primarily in accounting applications for business. FORTRAN is often the choice for the hard sciences, such as chemistry. BASIC is often viewed as ideal for interactive handling of text strings, particularly on microcomputers. PL/1 is often the choice for large databases that require sophisticated retrieval routines of lengthy text strings, such as is typical of abstracts.

Applications software consists of routines that may enable simple text-editing; or common utilities, such as file directory, file sorting, and file merging abilities. Applications can be relatively complicated for such areas as online circulation systems or online catalogs. Turn-key systems are totally packaged applications with little or no provision for local program modification.

PRINTERS AND TERMINALS

A Video Display Unit or CRT is a convenient device for quickly scanning computer output. A hardwire or direct connection usually permits high-speed display that flashes on the screen at 9600 characters per second. Remote terminals with display screens using dial-up modems usually display at 1200 characters per second. When hard copy is needed, a printer may be actutated by a command from the screen to copy exactly what is on the screen, as in the case of OCLC cataloging, or to print a whole series of records from a stored program, as is the case of citations from MEDLINE.

One capability that may be attractive to many libraries is that of having a printer that can accept queues of jobs from different CRT terminal users and print out the results in the sequence they are requested, often at a time when the computer is otherwise unoccupied. A capability sometimes desirable for the CRT screen display units is that of being able to forward messages to users at specified terminals, in the form of electronic mail, for their response at a time convenient to them.

INSTALLATION AND TESTING OF NEW EQUIPMENT

The most detailed specifications and clearly written application needs will not guarantee a successful operation if some clause in the Request For Proposal does not require a benchmark test prior to purchase and a satisfactory demonstration once installed. The benchmark should be run on equipment virtually identical to that being considered for purchase using the same applications programs as those called for in the specifications. The installation should have a cut-off date for satisfactory demonstration of the application in order to avoid costly delays and the tendency of some vendors to try to sell additional hardware or software at extra cost to the library -- a relatively common attempt no matter who the customer may be. Most reputable firms, either the manufacturer himself or third party houses, will have a systems engineer help with the installation in addition to the technical engineer. With few exceptions, the systems engineer is the most valuable contact the library can have since he or she is usally responsible for making sure that the sales person has represented the products correctly for the library application.

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page 5

Staff analysis and needs assessment

↓

* JUSTIFICATION of equipment/application

↓

REQUEST FOR INFORMATION (informal)

↓

Specifications for hardware, communications. software

↓

REQUEST FOR PROPOSAL (formal bids)

↓

Evaluation of bids: benchmark, installation, training,
maintenance, software development,
multi user access, telecommunications

↓

Purchase or Lease of system

TRAINING THE STAFF BEFORE AND AFTER INSTALLATION

By far, the most difficult aspect of purchasing a minicomputer or microcomputer is integrating its capabilities with the role each staff member sees himself or herself as having. The Request For Proposal should be a reflection of input from everyone who will use or be affected by the computer. Department heads should understand how their work flow may be changed. Library assistants should feel comfortable with a technology that may be new to them. Clerks should be assured, if such is the case, that the computer will not replace them but rather make them more effective. Everyone should have a clear picture of what the computer can do and what it is not designed to do. Key or representative staff members could even participate in the evaluation of various machines before a final decision is made.

SPECIFIC APPLICATIONS TO BE EVALUATED -- WRITING A JUSTIFICATION

A Request For Proposal should be preceded by some equivalent to a Justification, which explains why a computer is needed. The Justification should clearly outline the way procedures are presently being carried out and how the computer will improve the process for each application. Cost factors are the essential parts of any Justification. Some cost comparisons may involve use of the central data processing facilities of an institution versus an in-house mini or microcomputer. One consideration in dealing with purported services of a central facility is that of host compatibility. It is, for instance, unusual for a local mainframe to be able to exchange files with remote hosts such as NLM, BRS, SDC, or Lockheed. The ability of users at the library to go through their local host into a remote host for whatever data, bibliographic or factual, is very seldom found in most institutions. 54

Rough layout for slide

Blair
for
page 6

MICROMATION SYSTEM

4 multi processors
25 million characters storage

PERIPHERALS

ACT V-A CRT terminals
DECWRITER III high-speed printer
DIABLO letter quality printer

TELECOMMUNICATIONS

VEN-TEL } 300/1200 BAUD MODEMS
BELL 212A }

In a similar fashion, if one of the primary needs of the library is for structured programs, such as in inventory and accounting procedures, the local mainframe may already have some applications running that could satisfy some common library routines. The reliability of data storage on the local host may then be of concern. Some university facilities have frequent "down time" and may even lose data occasionally, especially if backup files are not made by the library for archival storage. Text-editing and word-processing for generation and reformatting of reports and correspondence are also available on many local machines -- WYLBUR and SCRIPT are two widespread examples, used at both Stanford and Texas A&M among others. The end-user, that is, the non-librarian, should also be considered, if not in the immediate application, at least for future enahncements. Allowing the library user, for instance, to leave requests for material to be ordered or for reference service via a terminal 24 hours a day and to retrieve a reply, even online printouts, at a location away from the library would probably require a fairly large of amount of storage on a minicomputer and also at least eight access ports for simultaneous communcations. All possible applications, therefore, should be outlined, even those contemplated several years from the immediate initial application.

THE TEXAS A&M MEDICAL SCIENCES LIBRARY SYSTEM

Being a state institution, Texas A&M University requires that the State bid process be followed, especially carefully in the case of computers. The need of the Medical Sciences Library for a minicomputer received thorough review by the College of Medicine, the purchasing office, and a computer study committee. The Justification went through several revisions using the WYLBUR text editor on the university Amdahl mainframe and its final version was typed on a Lanier word processor. The Request For Proposal was preceded by a more informal Request For Information, which merely asked vendors to describe

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SOFTWARE FOR CP/M OPERATING SYSTEM

- text-editor
- word processing
- forms generation
- five level file indexing
- utilities
  - sort/merge files
  - encode/decode passwords
  - diagnostics
- communications for Telenet/Tymnet
- languages
  - COBOL FORTRAN PL/I PASCAL
  - C-BASIC (subsets of each)

68

hardware and software without commiting themselves to an actual bid. The actual Request For Proposal specified software applications packages, programming languages, modems, CRT terminals, printers, and an operating system to be used on a multi user multi task microcomputer with specific configurations. The unit had to have a separate processing unit available to each of four simultaneous users for multi processing capabilities and had to be able to divide the user space into a total of sixteen partitions. The communications had to be capable of both 300 and 1200 baud, with auto answer for remote dial-up users on the 300 baud ports. Storage was specified as 14" Winchester hard disk with 24 million characters and two 8" floppy backup disks with 1 million characters between them. The programming languages required were COBOL, BASIC, FORTRAN, PL/1 and PASCAL to run on the CP/M operating system. Applications packages included were ones for text-editing, word processing, order and accounting forms generation, file indexing on five level keys, utilities for sorts, encode/decode security, and diagnostics, and, finally, a communications package for host dial-up via Telenet or Tymnet at either 300 or 1200 baud. The total for hardware, software, installation, and first year maintenance was $35,000. The names of manufacturers included: Micromation for the microcomputer, ACT-V-A for the CRT terminals, Ven-Tel for the modems, Diablo for a letter quality printer, Digital Equipment Corporation for a high speed printer, and previously ordered equipment consisting of three Texas Instruments printer terminals, one Hewlitt-Packard printer CRT, one high-speed Digital Equipment Corporation printer, and a Bell 212-A 300/1200 baud modem. The applications specified were: 1) an aquisitions module for the library 2) an accounting module for the College of Medicine 3) a developmental software module for a computer programmer in the Vice Chancellor's office and 4) a developmental library project to explore allowing remote users to use message switching via a microwave link for leaving requests with the library and for retrieving reference results, both from online and print sources.

In closing, it must be pointed out that there are a number of exciting developments in hardware technology, particularly in 16 bit microcomputer systems using shared logic and in interfacing small systems with sophisticated microcoded text retrieval modules whose large fixed disk storage of 80 million characters make the electronic library potential a greater possibility than ever. The software potential is not as great in terms of original programs specifically for libraries. The applications packages, however, are becoming more adaptable to library needs and the microcoded or Read Only Memory modules make modifying a routine less cumbersome than before. It, unfortunately, is still a seller's market as far as libraries are concerned, so great care in writing a Justification and a Request For Proposal is of utmost importance.

LOVEJOY FLYER SOUTHERN ILLINOIS UNIV./EDWARDSVILLE
February 27, 1981
No. 142

The following, which Rosamond Laythe has submitted to the new publication, Microcomputers-in-Libraries, upon their request, is submitted below for your information.

John C. Abbott

A Progress Report on the Use of Apple Microcomputers in Lovejoy Library, Southern Illinois University at Edwardsville

Several persons with whom I have discussed Lovejoy Library microcomputer applications, both at the ALA-LITA exhibit of the "Paperless Society" and by mail, have suggested we should document our development and progress.

Over the years as a middle manager I have been constantly asking the questions about how much, how many, when, and as compared to what. The answers have been filed away in tightly packed file drawers full of bulging folders. Yet when I need to get a new perspective on an old problem I dig forever, dragging out pieces of paper from numerous folders.

There's got to be a better way I kept telling myself. And now there is. The microcomputers have come to the aid of Lovejoy Library.

These microcomputers join four other Public Services computer services: OCLC, RLIN, DIALOG, and LCS (U. of Illinois Library Computer System) searching. The December 9, 1980 OCLC Newsletter (p. 5) quotes me as saying that Lovejoy Library's theory is "that the patron should be as free to use the terminal as he or she is to use the card catalog." As the Library became more and more computer oriented my feeling increased that there must be a better management method.

We are fortunate to have a highly motivated employee with some classroom background in systems analysis. He evaluated the microcomputers on the market in the fall of 1979 and recommended the initial purchase of an Apple II computer with dual disc drives and a high-speed printer. He also recommended programs for purchase. In May of 1980 an additional order for a second Apple II computer and the large capacity Corvus disc drive was placed. All this has been paid for with funds from our very active Friends of Lovejoy Library.

Our systems analyst has adapted some of the purchased programs for our use and has written several fine programs himself, tailored to our specific individual needs. Both "Visicalc" and "Magic Window" are heavily used.

Some ways we are using our microcomputer include:

1. Production of a music reserves catalog on demand. This consists of a shelflist, catalog by composer/title, and individual lists for each course and instructor.

2. New phonorecord catalog, similar to the Music Reserve, but with the additional feature of dated entries.

3. Analysis of Transaction Statistics by time, day, location and type.

4. Monthly, cumulative and comparative circulation and traffic statistics. These are compiled and printed in about 40 minutes. Previously this was a 3-day project with inherent calculation and typing errors.

5. Library personnel lists compiled by the administration are used to update and produce mailing and telephone lists. A Library committee list, with current membership and length of term of office is also being used to update information as changes occur.

6. Form letters requesting Reserve lists are stored and can now be quickly modified and produced each quarter before being sent to the teaching faculty.

7. A listing of periodicals, newspapers, and other serials purchased by non-library units, SIU-E circa fall, 1979. This was distributed to the members of the University Libraries Resources Council for the purpose of attempting to identify some available resources which might possibly supplement those of the library.

8. A break-down of the library budget for the years 1964/65 through 1979/80 in the categories of salaries, wages, materials, binding and "other", giving totals and percentages. Our Spinwriter printer enabled us to consolidate this information on a legal size sheet for easy comparisons.

9. The results of a survey of public coin-op copiers within the state university libraries of Illinois (CODSULI).

10. Preparation of a third edition of Masters' Degree Theses Presented at Southern Illinois University at Edwardsville: a Bibliography classified by subject area. This covers the period 1968-1980. A paraprofessional prepared this on the Apple II in approximately 60 hours using the "Magic Window" program. This compares with the use of a professional librarian assisted by a clerk and several student assistants over a much longer period of time for previous editions.

Upon the receipt of the new Corvus disc drive we began planning for the production of a Reserve catalog which will replace the shelflist, course lists and the public reserve card catalog. We finally decided to use the "Magic Window" program for this project also. It will be the most ambitious yet planned for the Apple II operation to date and will take several months to input and debug.

Other developments under consideration include:

1. An index to our local newspaper. We have already produced several years on microfilm.

2. Updating of approximately 150 library instruction bibliographies and search guides.

3. Compilation of Slavic and East-European bibliographies and other special research collection materials lists.

4. An index to the SIU-E Faculty collection, a permanent exhibit consisting of monographs and non-book publications, which will provide for easy updating and retrieval.

5. Analyses of comparative HEGIS statistics compiled from our own state university (CODSULI) library statistics.

6. Student payroll bi-monthly reporting of expenditures to date by library units.

If I ever find the time, I should like to apply for an Apple educational grant for orientation and library instruction, using Apples in locations normally used for building locations, with additional point of use instruction needed for that particular area. Our Corvus disc, along with a Constellation multi-plexer would make this possible.

Our director clearly sees the advantages of having our own computer power within the building and has a lot of ideas for projects we haven't yet formalized. The Friends of Lovejoy Library have just approved the purchase of our third Apple II unit for the administrative offices. When funds are available, perhaps not until the fall, still another Apple II will be purchased for the use of the Information Services/Library Instruction Office. The revision of the masters' theses publication was done in this area, and the newspaper index, the updating of the bibliographies and search guides, and the index to the faculty collection will also be done in that office. Presently one Apple II unit is being shared by the Information Services/Library Instruction, the Reserves, and the Music personnel. It makes more effective use of clerical personnel to have the microcomputer in the immediate working area. Just as you need your own typewriter nearby, so do you also need your own computer. It is our experience that the more you use the computer the more uses you find for it.

I have purchased my own personal Apple II for my office use. I have not had sufficient free time to do the kinds of statistical comparisons I want to make. We have a "Statistics Sampling Week" during fall quarter when we count reference transactions, in-house use of materials, and seating utilization. I have several years of samplings to work with. I have also started a comparison of two OCLC Public Services charges--Interlibrary Loan and Public Service terminal queries, which I can also run for several years. One program I am especially anxious to get started on is a Public Services productivity study using measures other than just "items circulated".

When I get these programs all in the Apple's memory I will have certainly cleared out a large block of materials in my files, as a start on my objective. I realize that a "paperless library" is not a valid goal at this time. But why not a "paperless office"?

Rosamond Laythe,
Assistant Director for Public Services
Lovejoy Library
Southern Illinois University
Edwardsville, Illinois 62026

2/24/81

SIUE **Southern Illinois University at Edwardsville**

Lovejoy Library

September 1, 1981

The most notable addition to the list of accomplisnments has been the production of copies of the Reserves catalog, which she mentions as being planned for near the bottom of the second page. We have also put our bi-weekly student payroll records, telephone costs by department, supplies inventory, a listing by title and allocation category of cancelled periodicals and newspapers (includes costs), and several special indexes, e.g. song titles for music, which amount to in-house reference works. We will shortly be producing a listing of cancelled serials and continuations similar to that for periodicals.

John C. Abbott, Director
Lovejoy Library

Lovejoy Library, Edwardsville, Illinois 62026

OHIO STATE UNIVERSITY

OSU

The Ohio State University

University Libraries
1858 Neil Avenue Mall
Columbus, Ohio 43210
Phone 614 422-~~6151~~
3900

March 26, 1981

Lawrence A. Woods
Head of Research and Development
Purdue University Libraries
Purdue University
West Lafayette, IN 47907

Dear Larry:

Attached you will find OSU's response to your OMS/ARL questionnaire concerning microcomputers in libraries.

You will note that Bill Crowe, Assistant to the Director, is the contact person, however I was delegated to complete the questionnaire. Bill is responsible for scheduling and coordinating use of the word processor, and I suppose that I am the default "technical" contact since I was involved in the selection of the unit and am writing some of the programs for the reports utilizing the mathematics package.

I would also like to describe a project which we are undertaking in two of our library locations. We are arranging to place coin-operated ATARI 800 microcomputers supplied by a firm in the Cleveland area into our Browsing Room and our West Campus Learning Resources Center; each location will have one machine, color monitor, cassette tape deck, and supply of pre-recorded software and documentation. I believe the Geauga County Public Libraries have already accepted some of the units.

The vendor, Computer Bus of 4-19 Meadowlawn Drive, Mentor, Ohio 44060, supplies the hardware, etc., and collects all income up to $25 per week. The library receives all income above $25 per week, and it may take a payment or use the income to purchase additional software. The library has no other financial obligation to the vendor, and he places the hardware in the library at his own risk. He also arranges for service of the hardware.

Computer Bus offers a number of configurations ranging from PET's to TRS-80's to the two types of Atari's. The user pays 25 cents per quarter hour on all of the machines except the Atari 800 which costs 50 cents per twenty minute block. Also, the vendor supplies $150 of software for each machine.

We have not installed the equipment yet, so I cannot tell you what the acceptance is. But, as soon as I have a measure of it, I will let you know.

David J. Norden
Assistant Head, Circulation Department

OSU Communication

Subject Recommendation to Purchase a Word Processing System for University Libraries

Date July 14, 1980

From Linda Bowers

To William J. Studer

Background

The Board of Directors of Friends of the Libraries at its April meeting agreed to allocate funds ($6,000) for the purchase of a word processing system to be shared by Friends and the Libraries system. Friends president Jo Failer offered an additional $2,000 to assist with the purchase.

The Library Publications Committee, increasingly aware of its need for more efficient production of camera-ready manuscripts and better management of its inventory and sales records, had decided about the same time to explore possibilities of purchasing a word processor. The two groups decided to pool their resources and explore together the capabilities of equipment of this type now available. David Norden has represented the Committee; Sally Keefe of Friends has provided insight as a word processing operator.

In evaluating word processing systems, the first questions that had to be answered was what applications the Libraries/Friends/Publication Committee would use the equipment for. These include:

1. Text editing and production of camera-ready copy for letters, manuscripts, reports, newsletters, proposals, etc.

2. Production of repetitive letters.

3. Mathematical processing, including the four basic mathematic functions.

We have viewed models and systems offered by CPT, IBM, Olivetti, Wang and Xerox. We compiled a comparison chart which enabled us to compare and evaluate capabilities, costs, supplies and maintenance.

Board member Don Stutesman of Dow Chemical has acted as "project adviser" throughout our search, and after we had looked at a number of systems, he urged us to examine the CPT 8000. At a recent meeting on office automation, Dow Chemical representatives from throughout the United States selected the CPT 8000 as their first choice for word and data processing systems. They concur that CPT and Micom are leaders in the word processing field, and they have recommended (though not required) that all Dow installations purchase one of the two systems.

Recommendation

The committee was most impressed with the CPT 8000. After having viewed eight demonstrations we are able to say with some confidence that the CPT 8000 is superior to other systems we have seen and that it satisfies all our requirements. The CPT 8000 is far ahead of some other systems we have seen in its ability to handle mathematical calculations and perform rapid sort and select functions.

Its price is competitive; total price ($14,741) is comparable to the Xerox 860 ($13,995), our second choice. The monthly maintenance contract on the CPT is $80, which is $57 less than Xerox. Several desirable features come with the CPT 8000, whereas with other systems, these features are optional and carry additional charges. Finally, the CPT offers a new full disk sort and select program which is offered at no charge during the month of July.

Questions relating to location of the machine and selection of operators can be settled prior to delivery. We recommend that the machine be located in an area where it can be used up to twelve hours a day, six days a week by designated personnel. The operators who go through the formal training should be able to assist other staff in learning to use the CPT 8000.

We recommend that the OSU Library system and Friends of the Libraries proceed at once with arrangements to purchase a CPT 8000. Delivery will take approximately 30 days. Training for two operators is provided free by the company and will take place prior to delivery.

Friends and the Publication Committee have $14,000 of the necessary $14,741 available at this time. We are prepared to request the remaining $741 from funds controlled by the two organizations, or we are open to other suggestions for obtaining this amount. Maintenance on the system is $80/month. The Friends Board can be asked to approve a portion of this from the Friends operating budget if the Libraries budget can assume the rest.

sk

LIBRARY
THE UNIVERSITY OF TENNESSEE
KNOXVILLE 37916
SYSTEMS OFFICE

April 6, 1981

Mr. Lawrence Woods
C/O Association of Research Libraries
Office of Management Studies
1527 New Hampshire Avenue, NW
Washington, D.C. 20036

Dear Larry and OMS staff:

The University of Tennessee recently acquired a fairly new IBM microprocessor called the IBM 5280 Distributed Data System. It is a powerful little machine designed to replace their 3741 floppy disk data entry machines. A brochure is attached. A better description can be obtained from IBM; request "GA21-9350-0 IBM 5280 Distributed Data System".

I ordered the smallest configuration because my primary need is for data entry. However is is programmable, has communications and printing capabilities and can have multiple units attached.

So far, I am very impressed with this machine. It is superb for data entry. The software is comprehensive, has several utilities for copying, listing data sets, performing data entry, sort/merge (under RPG), etc. I am most impressed with the documentation provided. Is is thorough, comprehensive, and easy to follow quite unlike any other IBM documentation I have seen previously.

I urge you to examine the 5280 series yourself for possible inclusion in your study as I believe other libraries may also be interested.

Another machine I saw recently and was impressed by is produced by a company named Vector Systems. The basic unit has a 64K processor, dual sided, double density, twin floppy drives and a qume-type printer, all for about $8,000. Software available includes graphics, word processing and support for major programming languages. It looked very impressive at first glance. I have not had time to pursue it further.

Best wishes in your project. Write or call if you need more information.

Sincerely,

Pat

Pat Barkalow
Head, Systems

LIBRARY
THE UNIVERSITY OF TENNESSEE
KNOXVILLE 37916
SYSTEMS OFFICE

February 27, 1981

MEMORANDUM

TO: Executive Committee

FROM: Pat Barkalow Pat

SUBJECT: Data entry assistance

As you are well aware, the Systems staff is involved with two major data collection projects, namely the Serials Cost Review II and the move to the storage facility. The table below indicates the estimated keypunching time required and the project deadline.

Project	Data entry time*	Deadline
Serials Cost II	9 weeks	June 1
Storage	7.6 weeks	May 18

Total = Estimated 17 weeks of data entry to be completed in 10-12 weeks.

*A week is defined as 5 days at 8 hrs/day or 40 hrs/week.

Our new data entry machine is scheduled for delivery next week. Thus we will have approximately 10 weeks between March 9 and mid-May to complete the data entry and verification.

To accomplish these tasks, I estimate that I will need a data entry person for 8 hours per day for 11 weeks. Realistically, I need two different people, one to work mornings from 8-12; the other to work an early evening shift from 4-8PM. (During spring break this would have to be 4-6.)

We can also add weekend time if necessary. This schedule will allow Tammy Miller to supervise and closely monitor both people's work as well as spend 4 hours per day in data entry.

To meet the deadline listed, I need these extra people to start work by March 11. Qualifications are listed below. I am quite willing to accept temporary transfers from other departments so long as they meet the requirements and can maintain the time schedule. I can't stress enough the importance of accurate data for both these projects.

Qualifications for data entry people:

- Good typing or keypunching skills (machine has a standard typewriter keyboard)
- Committment to accuracy in work
- Dependability
- Ability to work independently
- Ability to interpret a variety of handwriting
- Ability to concentrate and work thoughtfully

LIBRARY
THE UNIVERSITY OF TENNESSEE
KNOXVILLE 37916
SYSTEMS OFFICE

January 5, 1981

MEMORANDUM

TO: Don Hunt

FROM: Pat Barkalow

SUBJECT: Data Entry machine for Systems Department

As per our recent conversations on this matter, I have gathered together the cost data on the IBM 5280 Distributed Data System which is the fancy name that IBM has assigned to its floppy disk data entry machine.

Monthly rental	$208/mo	including maintenance
Two-year lease	170/mo	including maintenance

A savings of $38/month or $912 over the two year period will be realized by taking the two-year lease.

Procedures for data collection are as follows:

1. A format is set up by Systems staff to define the data fields to be entered, i.e., title of a journal, call number, etc. When the data is entered, the format and data appear on a cathode ray screen so that the operator maintains good visual contact throughout the process. The prompts also help eliminate errors and the machine can perform some other data checks to help accuracy.
2. The entered and verified data is stored on a floppy disk which looks like a 45 RPM record in its paper jacket. Floppy disks are very portable and quite sturdy. They also can be reused over and over.
3. The floppy disk(s) will be carried over to the State Testing Center in the HPR Bldg. (hopefully by S&R). My contact at State Testing is Jim Ulseth who will supervise the transmittal of our data to UTCC mainframes via the IBM System 34 located in their offices.
4. After transmittal, Systems staff will generate reports, store the data on magnetic tape and/or perform other needed operations.
5. Data can also be transmitted in reverse, that is, data that is already stored such as the serials cost project data can be transmitted to the floppy disks and then updated, corrected or deleted.

State testing will charge us a nominal amount for the transmission but that cost will likely be no more than Entrex now charges us for data transmission.

I might point out that the cost of Entrex at $250/month is substantially higher than the IBM 5280. Also we pay systems analysis charges at the rate of $16/hour to have the Entrex format set up for data entry. The Music Anthology project cost $229.50 for format set-up, changes to the format and data security. These charges would be eliminated with the IBM 8250 as these tasks would be preformed by existing Systems staff.

An additional machine is needed for at least two major projects:

A. Storage project
B. Serials cost review project

This machine can be used as a back-up to the Entrex terminal located in Binding. It could replace the Entrex machine except for scheduling problems. We really need two data entry machines for at lease the next six to eight months.

If we lease the IBM 5280 we are committed for at least 18 months. However, we can cancel Entrex at any time without penalty.

If you have other questions, please call.

/tem

82

LIBRARY
THE UNIVERSITY OF TENNESSEE
KNOXVILLE 37916
SYSTEMS OFFICE

January 26, 1981

MEMORANDUM

TO: Bob Harrison

FROM: Pat Barkalow

SUBJECT: Specifications for the IBM 5285 Programmable Data Station

Requirements

Quantity	Description
1	IBM 5285 Programmable Data Station, Model A01 with attachments as follows:
1	#4600 typewriter keyboard
1	#3505 1920 character display

Terms: 24 month lease
Price to include maintenance

The 5285 uses a single-sided 8" flexible disk in Format 1 with 128 bytes/sector and a capacity of 246 KB. This format is essential to maintain compatability via the Basic Exchange with the IBM System 34 presently in use at State Testing and Evaluation Center. The library has an arrangement with State Testing to transmit data through the System 34 to the DEC 10 at UTCC. Data will then be manipulated using UTCC facilities.

Any equipment bid must be compatable with the System 34 for data transmission.

/tem

MEDIA EQUIPMENT CONTROL SYSTEM (MECS)

DEMONSTRATION

CLAYTON A. SHEPHERD

KEVIN C. QUINN

GRADUATE LIBRARY SCHOOL
INDIANA UNIVERSITY
BLOOMINGTON, INDIANA

MARCH, 1980

84

MICROCOMPUTERS IN SCHOOL MEDIA CENTERS

The use of computers in library automation can no longer be ignored by school media specialists because of the high cost of computer hardware. The advent of new technology has made possible the manufacture of microcomputers the size of typewriters with the computing capabilities of the early first generation computers at a fraction of the cost.

The MITRE report that investigated the use of microcomputers in libraries felt that the full potential of microcomputers would be best realized in school media centers. They felt that school libraries, because of their size, would be able to use automated circulation systems that were controlled by microprocessors; the fact, however, that such systems will demand large capital outlays in the areas of hardware and data conversion militates against its widespread use in the near future. If school librarians are forced to defer consideration of microcomputers as a tool to aid in such applications as automated circulation systems, it does not mean that microcomputers are of little use to media centers. Microcomputers have a number of uses in media centers, but many of these will lie in other than traditional areas of library automation. All school librarians are faced with problems that microcomputers can help solve; the purpose of this demonstration is to point out one specific use of the microcomputer with the hope that it will suggest others to the media specialist. School librarians know their media centers best--if microcomputers are to be of help in such situations, it will be because media specialists have looked at traditional management problems in a less than traditional manner.

This demonstration is designed to show how a microcomputer might be of use in a school district that has both building level collections and a centralized district collection. In such a system the control of its audiovisual equipment inventory is a major concern. The presentation will help to explain how such a system could make use of a software package designed for specific objectives. The examples of printouts that are included are designed for illustrative purposes and will be explained during the course of the discussion.

Exhibit A is an example of a districts audiovisual hardware inventory file that has been sorted by accession number which appears as the last four digits of the field designated as "ITEM ID NO."

Exhibit B is an example of the same file which has been sorted by location and type of equipment (the first four characters of the ITEM ID NO.)

EXHIBIT A

ITEM ID NO. : SLPR0004
LOCATION : 4
MANUFACTURER : EAS
MODEL NO. : AF2
SUPPLIER : MPO
DATE OF PURCHASE : 11/15/79
PRICE : 225
TITLE 2 DESIG. : 1
STATUS : 2
BULB : ELH 300W
FUSE :
BELT :
BATTERIES :
OTHER COMPONENTS :
NOTES : 80 OR 140 SLIDES

ITEM ID NO. : SLPR0005
LOCATION : 5
MANUFACTURER : EAS
MODEL NO. : AF2
SUPPLIER : MPO
DATE OF PURCHASE : 09/15/74
PRICE : 225
TITLE 2 DESIG. : 1
STATUS : 4
BULB : ELH 300W
FUSE :
BELT :
BATTERIES :
OTHER COMPONENTS :
NOTES : 80 OR 140 SLIDES

ITEM ID NO. : SLPR0006
LOCATION : 6
MANUFACTURER : EAS
MODEL NO. : AF2
SUPPLIER : MPO
DATE OF PURCHASE : 10/15/79
PRICE : 225
TITLE 2 DESIG. : 2
STATUS : 1
BULB : ELH 300W
FUSE :
BELT :
BATTERIES :
OTHER COMPONENTS :
NOTES : 80 OR 140 SLIDES

(2 pp. omitted in kit)

EXHIBIT B

ITEM ID NO. : SLPR0001
LOCATION : 1
MANUFACTURER : EAS
MODEL NO. : AF2
SUPPLIER : MPO
DATE OF PURCHASE : 12/01/76
PRICE : 225
TITLE 2 DESIG. : 1
STATUS : 1
BULB : ELH 300W
FUSE :
BELT :
BATTERIES :
OTHER COMPONENTS :
NOTES : 80 OR 140 SLIDES

ITEM ID NO. : TPCA0018
LOCATION : 1
MANUFACTURER : SHA
MODEL NO. : RD464AV
SUPPLIER : PEC
DATE OF PURCHASE : 04/14/74
PRICE : 65
TITLE 2 DESIG. : 1
STATUS : 2
BULB :
FUSE :
BELT :
BATTERIES : 4C
OTHER COMPONENTS :
NOTES : NO EXTERNAL SPEAKER

ITEM ID NO. : TRCA0024
LOCATION : 1
MANUFACTURER : SHA
MODEL NO. : RD465A
SUPPLIER : MPO
DATE OF PURCHASE : 01/19/77
PRICE : 100
TITLE 2 DESIG. : 1
STATUS : 2
BULB :
FUSE :
BELT :
BATTERIES : 4C
OTHER COMPONENTS :
NOTES : AC POWER CORD MONO

(2pp. omitted in kit)

THE APPLE COMPUTER:

A Multipurpose Tool for the Improvement of Library Operations

INTRODUCTION

In January of 1980, the California State University-Northridge Libraries, through the library support group, the Bibliographic Society, purchased an Apple II Plus microcomputer. The reasons behind the purchase of that microcomputer and subsequent expansion of its usage for library-related purposes are discussed below.

The Bibliographic Society, as mentioned above, is a support group, a "friends of the library" association. In recent years, membership in the Society has burgeoned, a boon for our Library but a problem in terms of clerical support. Typing individual letters to new and continuing Society members became unfeasible since the task required considerable personnel time; resorting to mimeographed letters with all the personalization of a "dear occupant" advertisement was less than appealing and certainly did not help to attract Society members with the ability to generously support our collection. The efficiency and personalization offered by a wordprocessor appeared to be the most viable solution.

The Director of University Libraries at CSUN, Norman E. Tanis, serves as the Executive Secretary of the Bibliographic Society. We approached him with our problem, explained our proposed solution, and asked for his support. Tanis was quite enthusiastic about the idea of purchasing a microcomputer with wordprocessing capabilities. He fully understood the increased efficiency offered by such a system, and, we suspect, envisioned the expansion of the system which did ensue. Financial support was offered from the Bibliographic Society.

THE APPLE II PLUS SYSTEM

During 1980, the CSUN Libraries were fortunate to have on staff Ms. Idelle Port as Acting Assistant Director for Administrative Services. Ms. Port has extensive background in computer sciences and is familiar with wordprocessing equipment. Prepared with a list of software requirements, Ms. Port began the task of selecting a wordprocessor which could perform the functions required at a price within our limited budget. At that time, the reason behind the acquisition of a microcomputer was strictly for wordprocessing purposes. We wanted a system which could match address files to form letters to produce "personalized" form letters. We also wanted the system to have editing capabilities so that it could be used in drafting library reports. In the final analysis, selection of the microcomputer was quite simple. After comparing wordprocessing equipment on campus and equipment seen during demonstrations, we were convinced that the Apple II Plus microcomputer offered the capabilities required at the lowest possible price. Additionally the system was so easy to use that student assistants could be trained to perform the wordprocessing function.

Rainbow Computing Incorporated was selected as the vendor for our Apple, primarily because of their proximity to campus and the prompt service proffered by a local enterprise. Moreover, Rainbow offered a two hundred dollar educational discount which was also a definite consideration. On January 25, 1980, the following hardware was purchased:

48K Apple II Plus	$1295.
Disk drive with controller	595.
Upper/lower case adapter	50.
Hytype 1 printer & interface	1700.
Powerstand	125.
Sanyo 9" black & white monitor and cable	210.

It is important to note that the hytype 1 printer was a rebuilt model. We experienced a number of printer breakdowns during the first few months after purchase, and subsequently, we contributed another $150 to printer repair. However, during the twenty months since the purchase of our Apple hardware, this overhaul of the printer has been the only repair cost incurred.

In addition to the hardware listed above, we also purchased the Write-On Word Processor for an additional $99.50. This software package provides editing and other capabilities needed to process form letters. Later in the year, an acoustical cover ($357) was added to help reduce the noise generated from the printer.

APPLICATIONS

As mentioned in the Introduction of this paper, the initial need of the Library for a microcomputer is to have an efficient method to handle the correspondence, membership files, and other related records of the Bibliograhic Society. In addition, the microcomputer provides a very effective approach for budgeting and accounting purposes, for planning and allocation of the book budget according to program discipline codes; and for the Electronic Mail Service. These applications will be discussed separately in the following sections under Word Processing, Budgeting and Accounting, Book Fund Allocations, and Electronic Mail Service.

Word Processing

The Apple wordprocessing program, Write-On!, can be used for any writing and editing tasks including letters, invoices, manuscripts, reports and special forms. Through a system of simple commands, a typist can easily establish the document format, enter or edit text, and print material in final form. The program offers the option of printing on single sheets of paper or on continuous forms.

The commands required to manipulate the wordprocessing system are quite simple -- "P" for paragraph, "C" for center, etc. -- and staff quickly learned how to operate the program. Within two months, address files were converted to the Apple, and the microcomputer was producing the desired form letters, as well as address labels for promotional mailings. Additionally, a considerable amount of time on the Apple was devoted to the writing and subsequent editing of library reports and correspondence. Corrections, additions, and/or deletions to the text of such reports or correspondence are made through the editing program, and the revised text is printed within a matter of minutes. As can be surmised, this editing capability saves considerable clerical time in the typing and retyping of various library reports and correspondence.

The wordprocessor was extremely valuable during a faculty search and screen process. Form letters were drafted to notify applicants of the status of their applications, with provision for the addition of individual names and addresses at the time of printing. Thus, an applicant received a letter addressed to and typed specifically for him or her, avoiding the impersonalization of receiving a xeroxed memo addressed to "Dear Colleague." Yet, at the same time, this somewhat personal response did not require an inordinate amount of clerical time. Letters were processed efficiently and communication between the search and screen committee and applicants was timely.

In summary, the following files were established and stored on the Apple for use by the Bibliographic Society:

(1) address files of all members of the Society according to the month and year the membership was purchased;

(2) various form letters, including a renewal letter to be merged with the appropriate address file.

Additionally, files were established for frequently used library form letters such as routine announcements to be placed in the campus newsletter, retirement letters, and the search and screen letters referred to above.

Budgeting and Accounting

Wordprocessing is certainly not the only capability offered by an Apple microcomputer. A myriad of other software packages are available, running the gamut of games to sophisticated accounting packages, and we began to investigate other areas in which the Apple could either economize or provide a higher quality product or service. In particular, our attention was drawn to the VisiCalc program, a software package which offered accounting capabilities. Our immediate need was to develop a more accurate system for monitoring our personnel budget, and specifically, the savings generated from vacated positions.

The Library has an annual budget of over three and one-half million dollars, and a staff of approximately four hundred including full-time, part-time, and temporary employees consisting of administrators, faculty, staff, and students. Prior to fiscal year 1981-82, the Library had approximately forty-five accounts, and an additional forty accounts based on program discipline codes in the book budget. For the present fiscal year, 1981-82, the library accounts have been streamlined to approximately twenty-five, while still maintaining the forty book accounts.

The total library budget consists of four major categories: (1) personnel services, including salaries and wages for administrators, faculty, staff, and student employees; (2) operating expenses, including supplies, services and equipment; (3) books and periodicals; and (4) non-state funds, including mostly grants and revolving accounts.

The accounting format encompasses the following elements: (1) budget; (2) allocations of funds according to need projection; (3) encumbrances; (4) liquidated expenditures; (5) balances; and (6) percents expended.

In view of the above-mentioned conditions, one can easily see that the traditional manual accounting method is inadequate and time-consuming in controlling our library budget. These problems become even more complex in monitoring the personnel budget, as it is necessary throughout the year to channel salary savings to accommodate the needs of other expenditure items. In contrast, the Apple enables us to manage the entire library budget much more effectively and efficiently. It has the flexibility of meeting the continuous demand to revise the budget amount, shifting the expenditure priorities, reallocating funds to various accounts, adjusting the encumbrances and expenditures, and bringing up-to-date the balances as well as percents expended. Amazingly, all of these revisions can be accomplished with minimum effort, frustration, and time -- almost instantly -- by the microcomputer.

The VisiCalc program can be used effectively in simpler bookkeeping functions, as well. Indeed, monthly transactions for the Bibliographic Society are recorded on Apple files using the VisiCalc program. The microcomputer calculates the balance line, avoiding the errors in computation which often plague manual bookkeeping. A listing of these transactions is printed bimonthly, with summary lines to indicate (1) total funds received during the month; (2) total expenditures for the month; (3) total encumbrances for the month; and (4) total cost recovery charges for the month.

Book Fund Allocations

The CSUN Libraries allocate book funds among forty subjects (program discipline codes - PDCs) by means of a formula developed by David Perkins, Head Bibliography Librarian at CSUN. This formula relies on such factors as FTE (students), holdings, circulations, and publication unit costs. Thus, when computed manually, book fund allocations required a minimum of 240 separate calculations. The process was extremely time-consuming, frustrating, and prone to error. Through use of the VisiCalc program, data is entered for the various factors (holdings, circulations, etc.) under the appropriate program discipline codes. When all data elements are complete for each factor of the formula, the Apple computes the allocation to each program discipline code within a matter of seconds. The microcomputer, thus, computes book allocations more accurately and in significantly less time than the manual system.

The complete process of allocating funds according to program discipline codes is quite complex and falls outside the scope of this paper. However, Appendix 1 is included to illustrate the format and final product of this multi-phase process.

Electronic Mail Service

The latest addition to the microcomputer application by our Library is the Electronic Mail Service (EMS), which is the TYMNET's OnTyme-II system offered through CLASS (California Library Authority for Systems and Services). The EMS provides rapid transmission of mail. messages, and interlibrary loan requests efficiently and inexpensively using a computer terminal. Certainly, it will expand and improve our communication capability locally, nationally, as well as internationally. Moreover, the EMS will enhance the cooperation and sharing of resources between our Library and other institutions and agencies.

In order to connect our Apple II system to the On-Tyme-II system, a slight modification of the microcomputer is required by the addition of a serial input/ourput board and an acoustic coupler. Our current price of the serial board with installation is $225, and that of the coupler is $200.

CONCLUSION

The Apple II Plus microcomputer has been in operation in the CSUN Libraries for about two years. Our application of the system continues to expand -- from word processing and bookkeeping to budgeting and accounting, to allocating of book funds and to the Electronic Mail Service. The Apple has proven to be efficient and effective in handling these functions. The average use of the system by our Library is six hours daily in the normal eight-hour day.

According to our experience, the strengths of the Apple microcomputer system lie in its versatile capability and the availability, as well as adaptability, of its varied programs. It is relatively simple to learn and to use; and the costs are reasonably low considering the tasks it can accomplish.

--Clark C. Wong
Assistant Director for Administrative Services, CSUN Libraries

--Gayle L. Goldberg
Administrative Assistant, CSUN Libraries

NOTE: The authors intend to revise and submit this article for publication in a professional journal at a later date. No portion of this paper may be used without the express permission of the authors.

APPENDIX 1.
Book Fund Allocations

PDC	PDC NAME	PERCT OF VOLUMES PER PDC	UNIT COST JUNE 105 REPORT	COLUMN C TIMES COLUMN D	% OF DOLLARS PER PDC	DOLLARS ALLOCATED OF 469,048	NON FORMULA ALLOCATION	TOTAL 271 BUDGET
-----A	---------B	---------C	---------D	---------E	---------F	---------G	---------H	---------I----
0400	BIO SCI	.03677203	27.60	1.0149079	.04988751	16193		16193
0500	BUS & MGT	.07056250	21.74	1.5340288	.07540474	62303		62303
0600	COMMUNIC	.01684120	17.63	.29691034	.01459454	16492		16492
0701	COMP SCI	.00949429	17.71	.16814383	.00826506	8441		8441
0800	EDUCATION	.06761108	16.08	1.0871862	.05344032	44712	13300	58012
0900	ENGINEER	.03787800	27.72	1.0499782	.05161138	18827		18827
1002	ART	.04379245	19.42	.85044942	.04180360	21969	200	22169
1005	MUSIC	.03150123	19.38	.61049388	.03000865	14870	3800	18670
1007	DRAMA	.01345511	16.66	.22416211	.01101862	6506		6506
1101	FOR LNG G	.00934742	17.95	.16778622	.00824748	1366		1366
1102	FRENCH	.01001890	16.50	.16531186	.00812586	3506		3506
1103	GERMAN	.00481470	14.38	.06923545	.00340325	1152		1152
1104	ITALIAN	.00172062	20.26	.03485986	.00171353	680		680
1105	SPANISH	.00861431	15.02	.12938689	.00635998	5957		5957
1106	RUSSIAN	.00322867	15.14	.04888201	.00240278	207		207
1200	HEALTH	.04062866	22.82	.92714607	.04557360	16290		16290
1220	COMM DISOR	.00519450	20.16	.10472115	.00514754	3872		3872
1300	HOME ECON	.02365504	18.77	.44400518	.02182495	10270		10270
1501	ENGLISH	.10786848	17.71	1.9103507	.09390274	21789		21789
1506	SPEECH	.00521801	15.37	.08020082	.00394225	7839		7839
1509	PHILOS	.01543632	22.49	.34716274	.01706468	7877		7877
1510	REL STUD	.02984107	16.26	.48521582	.02385064	4106		4106
1700	MATH	.02080686	22.10	.45983168	.02260289	19287		19287
1902	PHYSICS	.01250205	27.61	.34518161	.01696730	5682		5682
1905	CHEM	.01228332	37.25	.45755378	.02249092	9533		9533
1914	GEOLOGY	.01161602	23.86	.27715819	.01362363	5819		5819
2000	PSYCH	.04516105	20.40	.92128533	.04528551	23463		23463
2100	RECREATION	.00987521	12.24	.12087259	.00594146	7832		7832
2202	ANTHRO	.01651591	21.00	.34683411	.01704853	5880		5880
2204	ECON	.02116733	19.79	.41890139	.02059098	16812		16812
2205	HISTORY	.08561534	19.95	1.7080260	.08395753	14776		14776
2206	GEOG	.02701630	24.02	.64893163	.03189805	12836		12836
2207	POL SCI	.04379621	19.02	.83300387	.04094607	14196		14196
2208	SOCIOL	.03907945	17.38	.67920085	.03338592	13863		13863
2211	PAN AF ST	.01105540	17.78	.19656505	.00966210	6494		6494
2213	CHICANO ST	.00582996	15.87	.09252139	.00454786	7429		7429
2214	URBAN ST	.00344401	20.93	.07208311	.00354322	1308		1308
4999	WOMEN ST	.00583034	19.64	.11450787	.00562860	602		602
9411	GENERAL	.02610299	28.10	.73349408	.03605469	7962	45600	53562
9412	REFERENCE	.00268830	28.60	.07688526	.00377927	24	12000	12024
9414	LIB LIT	.00611936	14.80	.09056647	.00445177	24		24
		1.		20.343930	1	469048.00		
9413	DUP & REPL						12000	12000
						TOTALS	86900	555948

GENERAL OR COMMERCIAL APPLICATIONS

NATIONAL LIBRARY of MEDICINE

FACT SHEET

Bethesda, Maryland 20209 October 1980

INTEGRATED LIBRARY SYSTEM (ILS)

The Lister Hill Center's Computer Technology Branch is developing an Integrated Library System (ILS) as a research and development effort to address the library automation needs of NLM and other health-science institutions. The goal is to develop an ILS which can be adopted by health-science libraries at all levels to improve their services, to allow better management of library collections, and to promote more effective resource sharing. However, the ILS is certainly applicable to and can be adopted by any library, not just health science libraries.

The design objectives are: 1) modular integration of functions and files; 2) operation on a range of hardware affordable even by small libraries; 3) software that is responsive to varying demands; 4) transportability of programs; 5) multi-level user interfaces; 6) system network access; and 7) compatibility with NLM's planned MEDLARS III system.

The Integrated Library System is capable of operating on Digital Equipment Corporation's PDP/11 series (including the LSI 11/23 microcomputer), the IBM Series 1, and the Data General Eclipse series computers, under the standard MIIS operating system supplied by Meditech, Inc. of Cambridge, Massachusetts. To install ILS, a library must acquire the appropriate hardware configuration and the Meditech standard MIIS operating system.

The basic capabilities that are provided in the initial phase of ILS (Version 1.0) are:

1. *Master Bibliographic File.* Each library can define which data elements (tags and subfields) of a MARC-compatible bibliographic record it wishes to store locally. It is also possible to create a master file using data from other bibliographic source tapes such as LC, OCLC, and Blackwell North America.
2. *The Circulation System.* The circulation subsystem includes bar code or manual (CRT terminal-assisted) check-in/check-out capabilities. Both patrons and items can be identified by a wide range of entry points, including identification (ID) number, personal name (author or patron), call number, and title. The patron registration function contains parameters used at the Army Library, Pentagon, where Version 1.0 has been installed. A generalized capability for defining patron registration parameters is planned. While the present version functions only with HP 2600-series-compatible and OMRON computer terminals, the terminal control subsystem is table-driven and, hence, extension for use with other terminals should present minimum difficulties.
3. *Serials Check-In.* The basic serials check-in allows the local creation of bar codes directly from the Master Bibliographic File (MBF), including three lines of human-readable information, as well as the production of routing slips from an inexpensive printer attached to the CRT terminal. Hence, the MBF is updated upon check-in and the serial issue is immediately available for circulation.
4. *Searching Capabilities on Online Catalog.* This allows limited search of the Master Bibliographic File through the use of a variety of terminals (more extensive search capabilities will be part of future versions of the ILS).

Future enhancements of the ILS to be developed include: 1) serials control; 2) acquisitions; 3) cataloging; 4) authority file; 5) generalized network access module; and 6) patron-level interface.

ILS Version 1.0 may be obtained through the National Technical Information Service as PB80-202658 for a licensing fee of $2,000. While ILS may be implemented on computer equipment costing as little as $25,000, equipment for a medium-size library may cost $70,000 or more. There are many other costs associated with the installation of a library automation capability, including those for the MIIS operating system, facility preparation, software changes and maintenance, supplies, and specially trained personnel.

The initial release of ILS contains extensive documentation on the system tape which may be accessed online at the terminal or printed offline at a line printer. This documentation includes: user documentation for all circulation subsystem functions and general functions used system-wide, global (or file) descriptions, and detailed program descriptions including documentation on all system-wide variables. The program documentation includes the name of the MIIS program, a short description, its purpose, the variables referenced, the variables altered, and a listing of the program itself.

Accompanying the NTIS tapes are two hardcopy documents containing information on the creation of the Master Bibliographic File. One document contains information needed to create the local MBF file. The profile establishes the tags and subfield codes selected by the local institution which will ultimately make up the bibliographic data base at the local site. The other document gives the user a global view of how to build selection strategies for extracting bibliographic data from magnetic tapes from virtually any MARC source, for example, LC and OCLC.

For more information, write or call the Computer Technology Branch, Lister Hill Center, National Library of Medicine, Bethesda, MD 20209 (301-496-1936).

ILS Implementation Costs

Charles M. Goldstein

There are a number of costs associated with the installation of a local library automation capability including those for

- o hardware procurement
- o facility preparation
- o software procurement
- o software changes and maintenance
- o hardware maintenance
- o supplies
- o specialized personnel

1. Hardware Procurement

One of the major design objectives of ILS was to achieve as efficient a use of computer capabilities as the state of available technology would allow (see Reference 1). It is difficult to project hardware costs for ils users generally since the amount/size/cost of equipment is highly dependent upon the size of the library (holdings), transaction rates (circulation, cataloging, etc.), and the number of functions to be integrated. In choosing computer equipment, two major factors to be considered are the size of processor required and the size of auxiliary disk space. ILS can be made operational on computer systems listing for as low as $24,000 with 20 megabytes, or $27,500 with 40 megabytes of disk storage. The smaller the processor the smaller the load it will support with good response. But, in general, small libraries have small loads. The size of disk storage can be roughly estimated by noting that a full MARC record has an average of about 700 bytes; hence, including a reasonable set of indicies, etc. 1000 bytes per title is estimated. Hence, a collection of 30,000 titles would require approximately 30 megabytes of disk storage. If only a partial MARC record is desired, then the storage requirements will be correspondingly smaller.

Additional equipment purchases would be required for tape drives, line printers, computer terminals, bar code readers, etc. It is difficult to envisage a moderate size system costing less than $60,000; larger systems would cost considerably more with disk storage becoming the major cost for large collections.

2. Facility Preparation

Facility preparation is an often overlooked facet of automation costs. This may (usually does) include additional air conditioning, raised floor, partitioning, etc. Costs and requirements for facility preparation are very much dependent on local needs and services. In general, smaller hardware configurations will require less facility preparation.

3. Software Procurement

In order to install ILS the MIIS operating system must be procured from Meditech. The lifetime lease will cost approximately $15,000 for minicomputer versions. Microcomputer versions may be available for as low as $5,000. Maintenance of MIIS from Meditech may cost as much as $3,000 per year. ILS Version 1.0 is available on magnetic tape from NTIS for $2,000 plus copying costs. Future releases of ILS will be available to licensed users for an incremental cost only.

4. Software Changes and Maintenance

As stated in Reference 1, "NLM will not provide financial or operational support of ILS developments..." Each library will no doubt have some changes it wishes to make. While ILS is written in a higher level language and is, in terms of computer programming, easy to modify, it is unlikely that many libraries will have in-house expertise in MIIS. Contract assistance will, in general, be required for both customizing of software, installation of new releases, and software maintenance. One to two thousand dollars a year for software maintenance is not unusual for present vendor supported library automation systems. Costs associated with changes to the software are totally dependent on local library requirements. Each library considering the procurement of an automated system is advised to first consult with a reputable vendor of these services to obtain an estimate of costs involved to effect the desired changes.

5. Hardware Maintenance

Hardware maintenance is another often overlooked factor in automation costs. Annual costs for equipment maintenance are roughly 10% of the purchase price.

6. Supplies

Necessary supplies include printer paper, magnetic tape, disk packs, terminal paper, bar code labels, etc.

7. Specialized Personnel

Some libraries may opt to hire data processing personnel in order to have an in-house ability to support software maintenance and local modifications. In most cases competent librarians may be trained to provide operational support short of actual program changes. The ILS design allows the trained librarian to change system and circulation parameters without having to resort to programming changes. It must not be overlooked, however, that the librarian trained and competent in library automation systems can and will demand a higher wage in the library marketplace.

BEING ORDERED; INSTALLED AT BROWN UNIV:

Your Library and INFORM

INFORM is a new tool in the field of library automation. It provides a self-contained information center that can greatly enhance the efficiency and effectiveness of any library and its staff. INFORM is made up of a microcomputer (no bigger than a stereo receiver), terminals and powerful programs that make information collection and dissemination fast and simple.

INFORM can help people find their way around a complex library building.

INFORM can train patrons in card catalog use.

INFORM can broaden patrons' horizons by showing them resources of the library that they are unaware of.

INFORM can keep its users abreast of events in the community.

INFORM can help patrons learn to use audio-visual, microform, copying and other equipment.

INFORM can provide an extensive directory of local business and government. These interests can be instrumental in supporting the installation of an INFORM system.

Use of INFORM within a network of libraries can insure uniform and accurate information throughout the network.

INFORM systems are inexpensive and represent one-time investments addressing long-term needs.

--Please contact PL Systems if you would like more information.

April 14, 1981

To: Ron Fark

From: Valentine Urbanek Val

Subject: INFORM

As you know, I have helped Providence Public Library implement its INFORM system and, as a result, I have become sold on the system's usefulness in a library setting. I propose we get a system of our own for the Rock.

The Library's current trend to bring public service out-of-the-closet and into full view of patrons can only be enhanced by a system which gives this exposure another dimension. INFORM organizes both simple and complex library public information in a way that is easy for a patron to handle. While building the date base the Librarian must think through and determine user needs and questions, structuring and stylizing the information accordingly. The nature and type of information in the system can and should be as broad as possible since the user's needs and interests will determine the direction, focus and function the system will serve for him.

An INFORM system would possess many of the features of a library handbook, providing a broad range of information such as a general description of the Brown University Libraries, policies and procedures and a location directory. The automated handbook has an advantage over its hard copy counterpart by virtue of the fact that it does not become obsolete as soon as a policy is changed or a collection of books is moved to another level. Other media, from video to hardcopy, attempting to achieve the same or similar ends suffer from the static nature of the finished product as well as the expense and time involved in updating and/or editing. An INFORM data base is dynamic and flexible, allowing addition and change with relative ease and no cost.

To a certain extent INFORM can also serve as an instructional vehicle for helping students learn the use of some of the Library's shop tools: the card catalog, the public access terminal, Reader's Guide , etc. With the computer sophistication extant at this campus, students should have no difficulty relating to another terminal. INFORM is sexy. It attracts an audience. It is responsive and provides immediate gratification to touch (of keyboard or screen). The system would be available day and night for queries giving personal attention to the timid, providing new horizons for the bold, handling hackneyed as well as difficult questions. An investment in an INFORM system would be a commitment to ongoing Library orientation and instruction, extending well beyond the fervor of freshman week. The importance of this public relations aspect of the system cannot be ignored.

Florence Doksansky and Wendy Lougee from Reference have seen the

April 14, 1981

Providence Public Library INFORM data base and agree that the system could have a positive impact at Brown. I am convinced that contact with other departments would generate other uses and applications for the system such as, for instance, a new book listing.

This proposal for the purchase of an INFORM system needs the support of the Reference Department which would help compile, edit and develop the "look" of the data base. The Circulation Department, in the person of yours truly, would build and maintain the data base.

The costs and possible configurations of the system are outlined below.

COSTS:

Computer system.	.$2500.00
Operating system	.$400.00
Diskettes.	.$60.00
Terminal support hardware /per terminal	.$425.00
Keyboard Terminals	.$700.00
Touch Terminals.	.$2000.00

EXAMPLES:

2 Terminal system using keyboard terminals at Rockefeller only.	.$5210.00
3 Terminal system - same as above.	.$6335.00

cc: pl
ar
fd
wl

THE INFORM SYSTEM - Product Description

Product Definition

The INFORM System is a turnkey, microcomputer based, public information system. It allows the provision of any body of information to a user group or audience. INFORM uses CRT terminals with touch sensitive screens to make user input as simple as possible and to eliminate the need for any user instructions.

Data Organization

The information in an INFORM System is organized hierarchically. INFORM shows its user a screen of topics to explore. Upon selecting a topic, the user sees a new screen of sub-topics. This process continues, narrowing the subject until information in the form of text, lists, tables etc. is reached. At any time, the user can "move" horizontally or vertically within the data base. They can also "backtrack" on the trail they have followed through the information.

Special Features and Options

-Touch Sensitive Terminal Screen : Fingertip input.

-Recycling Logo Screen : Every 10 seconds, when idle, the INFORM logo screen, visible at a distance, redraws itself to attract attention.

-User Timeout Feature : If a user does not respond within 2 minutes (or they leave the terminal without "touching" the QUIT option) the terminal reverts to the logo screen to prevent confusion for the next user.

-Printers : Printers can be attached to terminals to allow users to print out anything they see.

-Other Forms of Information Display : INFORM can produce high resolution graphics and control random access slide projectors, audio sources, laser disks etc. to provide total information dissemination.

System Components

INFORM microcomputer - 4MHz Z80 CPU, NorthStar Horizon
Storage - 720Kb Diskette (minimum), Hard disk optional
User Support Package - 32Kb RAM, I/O Port
Terminals - Full line from standard keyboard-display to high resolution graphics with touch input
INFORM User's Manual - Documentation and diskettes
INFORM Program Package
  EDIT - Text editor used to build input data files
  FORMAT & GEN - Used to format data and build data base
  INFORM - Multi-user program that makes data base available

System Capacities

A single INFORM computer can support a maximum of seven terminals. Multiple computers can be used to support unlimited terminal needs and to minimize wiring for multiple locations.

The smallest INFORM system can store approximately 700 screens of information. By adding diskette or hard disk storage, the capacity can grow indefinitely.

CLSI BACKUP AT JOHNS HOPKINS;
BRIGHAM YOUNG;
APPLE

COMPUTER
TRANSLATION
INCORPORATED

LIBRARY SYSTEMS DIVISION

PRODUCT PROFILE

LIBRARY CIRCULATION SYSTEM

106

CTI, 1455 South State Street, Orem, UT 84057, 801/224-1169

CONCEPT: To provide an efficient circulation system to service the circulation needs of a small library.

EQUIPMENT:

(Hardware) 1. Apple* Microcomputer is recognized as one of the most reliable in the industry.

(Software) 2. Apple circulation system created by C.T.I.

COST:

(Hardware)	Apple II Plus 48K	$1,530.00
	Disk Drive with controller	645.00
	Disk Drive without controller	525.00
	12" Monitor—green screen	285.00
	Monitor Cable	10.00
	Memory Expansion Module—16K	120.00
	Hardware TOTAL	$3,115.00
(Software)	Software System	$3,000.00
	Software Maintenance (per year)	400.00
	Software TOTAL	$3,400.00
	Circulation System Software and Hardware TOTAL	$6,515.00
(Optional Hardware)	Epson MX 70 Printer	$ 450.00
	Parallel Interface Card	85.00
	Cable	25.00
	Optional Hardware TOTAL	$ 560.00
(Optional CTI Features)	Light Pen Feature	$ 600.00
	Function Key Control (on the Apple)	150.00
	Scheduling Program—Employees and Lockers/Carrels	250.00
	Statistical Program	45.00
	Lobo 8" Disk Drive for Apple with controller	2,200.00

Additional options available upon request.

*Apple is a trademark of Apple Computer, Inc.

ADVANTAGES:	BENEFITS:
Insures all data is collected at time of transaction.	1. Checkout and checkin data is stored immediately. 2. Provides better control at circulation desk.
Eliminates manual keying of transactions.	1. Saves time as computer does the update. 2. Assures accuracy as human input is kept to a minimum. 3. Enters each transaction in order.
No surprises! You are always in control.	1. Identifies delinquent patrons. 2. Lists over-due items. 3. Lists exceptions and problems. 4. Immediately identifies illegal bar codes. 5. No danger of losing data if machine is turned off.
Simplicity leads to success.	1. Uses easy formats and prompts. 2. Quick start-up—60 seconds. 3. Light Pen and Function Key Control enhance simplicity.
Flexibility makes Apple and CTI Circulation System a great team.	1. Apple used as a regular terminal. 2. Additional programs available for the library. 3. Adding your own program is easy. 4. Report printing adds flexibility.
Bookmobile Benefits.	1. Compact—takes up very little space. 2. Power supplied through AC outlet or battery. 3. Bookmobile transaction data base remains with the bookmobile at all times.

CTI, 1455 South State Street, Orem, UT 84057, 801/224-1169

QUEEN'S UNIVERSITY/CANADA

DOUGLAS LIBRARY

Queen's University
Kingston, Canada
K7L 5C4
Tel. 613 547-5950
Telex 066-3244

Queen's Library operates a word processing software package called Q'Text on our mini computer. This package was developed at Queen's University and is now available commercially. The advantage of this package is that the traditional word processing capacity is augmented with a programmable arithmetic system called CALCULATOR. This feature means we can run casual payroll, inventory, and budget control applications on the mini.

Queen's University Libraries also have an in-House Geac 8000 on which we run Circulation and Acquisitions, with new applications being planned. We are developing an interface between the minicomputer and the Geac 8000 so we can transfer various files and segments of files at ease. In this way, we hope to optimize flexibility and range of applications on both machines.

FROM VERSATILE WORD PROCESSING.

FLEXIBLE? DEFINITELY!

Q'TEXT is a flexible word processing system from **Data Terminal Mart**, designed specifically for the world's most popular minicomputer . . . at a competitive price.

EASY TO USE? ABSOLUTELY!

Q'TEXT is an operator's dream. It has been designed with the operator in mind. **Q'TEXT** responds to easy-to-learn user commands. The need for time-consuming menus has been eliminated. The operator is confident of error-free operation, every step of the way, through the continual use of internal checks and scans.

ALL THE BASICS . . . AND MORE!

Q'TEXT has the features of a conventional word processor. Plus a lot more. Features like smooth scrolling, automatic hyphenation and variable line spacing within the text are standard with **Q'TEXT**.

Q'TEXT PASSED THE TOUGHNESS TEST . . . WITH HONOURS!

Researchers at Queen's University needed a system to help them with their own administrative and research demands. So, they decided to invent their own. It took five years to develop but now **Q'TEXT** has come of age, handling the challenging demands of both the university and the business environment. And it's on display now at your local **Data Terminal Mart**.

AS YOUR DEMANDS GROW . . . SO DO THE CAPABILITIES OF Q'TEXT

Q'TEXT has been designed to grow right along with your applications. Sort, merge and powerful mathematical functions provide basic data processing. As well, **Q'TEXT** produces files accessible to other computers. And, for more demanding file analysis, a fully integrated file query language is available. It's called **Q'UERY**.

TO BE MORE SPECIFIC . . .

Q'TEXT runs on the PDP-11 family of computers under the RT-11 operating system. **Q'TEXT** is fully supported with a subscription service including application notes and program updates. The following are some of the specific features of **Q'TEXT**:

DISPLAY HIGHLIGHTING: Special characters to indicate underscoring, bolding, subscripting and superscripting, are displayed as highlighted characters that flash, are underscored, or appear as reverse video.

ALTERNATE CHARACTER SETS: Optional scientific and foreign language character sets are displayable on the screen.

SMOOTH VERTICAL SCROLL: Text in the display area can be scrolled smoothly forward and backward, maintaining readability during movement. Screen-at-a-time movement and absolute and relative window positioning is also supported.

SEARCH: The document may be automatically searched for occurrences of a specified string of characters; the window and cursor are moved to successive occurrences as the operator requests.

MARGIN ADJUSTMENT: All reformatting is produced on the screen and the effects of reformatting decisions are immediately reflected in the screen display.

AUTO CENTERING: Text can be centered between margins with a single keystroke. This same feature also provides the option of left or right flushing of single lines of text.

AUTO WRAP-AROUND: Text crossing the right margin is automatically carried down to the next line.

HYPHENATION: End-of-line words may be hyphenated either algorithmically, or manually, to afford more compact lines after reformatting.

BLOCK MOVE, COPY AND DELETION: Any number of continuous lines of a document can be marked, and then either deleted, moved or copied to another part of the document.

FILE INSERTION: Pretyped text may be selected from the disk and inserted into a document without retyping.

REPLACE: One string of characters can be replaced by another throughout the document, or over a specified range.

DECIMAL TABBING: The system will automatically align columns of numbers at tab stops.

SETTING EQUATIONS: Multiple levels of subscripts and superscripts can be easily entered without the use of special control codes.

SORT: The lines in memory can be alphabetically or numerically stored, ascending or descending, on any set of columns.

KEYSTROKE STORAGE: Characters, text functions or commands, can be stored in up to 10 memory locations to be recalled by a special function and memory number. This is useful for storing frequently used terms or phrases, or a frequently repeated operation.

JUSTIFICATION: Operator-selectable left and/or right justified text.

CONCURRENT PRINTING: The full capabilities of the editor are available while a document is being printed. Other documents can be placed on the print queue to be automatically printed after the previous documents have been finished.

PAPER FEED: Continuous form printing or single sheet feeding can be selected by the operator.

AND ALSO . . .

PROGRAMMABLE CALCULATOR

In its simplest form as a four-function pocket calculator it can evaluate expressions typed on the command line. The more powerful aspects of this subsystem permit the selection of prestored programs, or the definition of new programs which will operate on data in the text. This allows row-and-column operations on tables, analysis of irregular formats, statistical applications and report generation.

DOCUMENT MERGE

Document merging combines a record file with a skeleton file which designates the data items to be used and where they are to be placed. For example, address lists can be merged with the body of a letter to produce personalized letters; or reports can be generated in specific formats to match preprinted forms. As with the calculator, the merge capability is an integral part of the editor, invoked with a single command and requiring no special operator intervention.

AS A RESULT . . .

In addition to normal word processing these features can be applied to items such as:

- subscriber data: mailing labels, renewal and billing notices.
- tenant data: lease preparation, rent change notices or tenant lists arranged by building and apartment number or sorted by last name.
- part-time payroll: preparation of cheques, address labels, summary reports.
- staff lists: salary notices, mailing labels, personnel dossiers.

Computing Centre

IVInews

MARCH 1980

ISSUE NO. 3

WORD PROCESSING TRAINING SESSIONS WELL RECEIVED

Computing Services and Personnel Services have joined forces to present a joint training program for Queen's staff who are interested in acquiring basic word processing skills.

Three groups of employees will receive a total of six hours of instruction (there is a two-hour session once a week for three weeks) which will enable them to operate the IVI system. The staff members who were invited to attend the experimental training program are from departments already owning word processing terminals, enabling participants to spend at least some time practising between training sessions.

Meantime, news travels fast, and requests are being received by both Computing and Personnel Services to hold more sessions in basic, as well as advanced, word processing techniques.

The feasibility of meeting these requests is under review. The immediate problem is availability of terminals. Several departments have been extremely cooperative and understanding and have loaned terminals for the program, (our thanks to Economics, Geography, School of Business, Faculty of Education and Faculty of Medicine) but this has seriously disrupted normal work. It is hoped that a solution can be found to the problem, so that expressed training needs can be met.

Do you have word processing training needs in your department? If so, please contact Margaret Gow (3288) or Eveline Flint (6907) and let us hear about your requirements.

IVI USERS' GROUP

Peter Schell, an IVI user in Douglas Library, has suggested the formation of an informal IVI Users' Group. He proposes that interested IVI users meet occasionally (perhaps quarterly) to take part in seminars in which particular applications of IVI are presented and then discussed. Possible topics include handling of personnel records, the management of degree lists and the preparation of bibliographic files for retrieval by keywords.

Computing Services is prepared to coordinate these seminars, but will rely upon users to offer to lead seminar sessions. To indicate an interest in attending these meetings or making a presentation at them please call Margaret Gow or Bruce Pond at 3288.

IVI QUESTIONS

Question: In printing a file the spacing between lines is not correct, and page breaks occur in the wrong places. Why is this?

Response: The setting of length of page, character spacing (pitch) and line spacing is done by printer control commands entered in a file (see "Vertical and Horizontal Spacing, Pagination" in the IVI Manual). They have an effect on the printer at the time of listing a document and remain in effect until another printer control command, which changes the setting, is encountered by the printer. What has probably happened in this case is that a previous user listed a file which had printer settings other than those which were desired for this file. The way to overcome the problem is to include printer control commands at the beginning of the file being listed.

Question: Why, when printing a document would all the characters print on top of each other?

Response: The printer spacing commands in file being listed are probably incorrect. The most common error is that a semicolon or a period has been used instead of the full colon. The effect of this error is to set the vertical or horizontal spacing to zero printer increments.

PRINTING 3-UP LABELS

Tom Boyle at the Faculty of Education has developed a program for printing address labels on 3-up label forms. The program converts an address listing created using the IVI merge facility to a "3-across" format and prints the addresses on one inch 3-up continuous form labels. For more information contact Tom Boyle, Faculty of Education, local 5797.

Computing Services

Q'news

FEBRUARY 1981

ISSUE NO .7

Q'TEXT USED TO PRODUCE NEWSLETTER

This issue of Q'NEWS has been set on a daisy wheel printer controlled by Q'TEXT.

The characters on the common ELITE and COURIER daisy wheels are designed so that the differences in their natural widths are minimized. This allows the use of these typefaces with typewriters which advance a standard distance after striking a character. The widths, however, of individual characters on the THEME-11 daisy wheel with which this issue was printed are such that text would not be pleasing unless the printer, after striking a character, advanced a distance appropriate for the width of the character. This printing action is called 'proportionally spaced printing'.

The next version of Q'TEXT will, at the operator's option, cause daisy wheel type printers to print text proportionally spaced. The feature is available for a number of different daisy wheels.

Bob Stevens

Q'TEXT UPDATE

Q'TEXT manual updates for version 7.6 have been mailed to persons who have purchased manuals. Installations should insure that their system disk has been updated to version 7.6 (the version number is flashed briefly when the system is started). If not, mail a copy of the system disk along with a return address to:

Q'TEXT Support
Computing Services

Q'TEXT SUPPORT

Recent internal changes in staff responsibilities have resulted in a slight change of faces in the Q'TEXT support area.

Bob Stevens and Bruce Pond have been re-assigned to other project areas. As a result of this, effective March 1, 1981, the primary contacts for Q'TEXT support will be Margaret Gow, with whom you are all familiar, and Neil Maxwell who has been increasingly involved with the development of Q'TEXT facilities.

Doug Crowe

Q'TEXT USERS' GROUP

Several items were discussed at the last executive meeting (December 17). These included:

Typesetting - After the initial interest expressed at the organizational meeting, it was decided to gather together those people interested in typesetting to suggest their concerns to both Computing Services and Graphic Design. After a number of phone calls this idea died due to lack of response.

Multi-line Sorts - A flurry of interest in bibliographic data files brought several requests for a sorting routine capable of dealing with multi-line records. This presents several problems and in the interim the best technique appears to be transferring the files to the B6700, sorting them there, and then transferring back to the mini computers.

Tip of the Month - Many operators are unaware of simple techniques which could make life much easier for them. An example is the use of the commands POsition and ADvance to move rapidly through a file as opposed to repeated <ctrl> P's and Q's (see the manual page T.1.4/2).

User Group Seminars - Many groups have developed expertise at particular applications of Q'TEXT. It was suggested that one hour seminars demonstrating these techniques be organized. Two suggested topics were the Library's casual payroll system and Education's use of Q'UERY address files. If you have some Q'TEXT system which you are proud of, why not show it off? Call Tom Boyle at 5797.

Operator Comfort - Operator fatigue can be a major problem in word processing stations. It is hoped that we can collect information on proper lighting, screen and keyboard positions and other work area factors. If you have any information or concerns please let us know.

Optical Character Recognition - Neil Maxwell of Computing Services is working on this. If enough people are interested they may be able to pool resources and purchase a scanner.

Special Characters, Equations - The Mathematics and Science areas are interested in improving the handling of equations by Q'TEXT. If you are interested, Peter Scott of Chemical Engineering, and Robin Giles of Mathematics have been active in this area.

Random Notes:

The information forms sent out last December were a dismal failure. We received all of nine back, two of which were from outside Queen's. If this sort of response is ongoing then the User's Group will have a very short life span.

One of the main topics of the next executive meeting will be office management with respect to Q'TEXT. This will include priorities and scheduling, education of staff and faculty, and filing and backup systems. If you have any concerns or information get in touch with any member of the executive.

Get involved. If everyone does something then nobody has to do very much. Otherwise, Q'TEXT at Queen's will turn into isolated sites continously re-inventing the wheel.

Tom Boyle

CARD READING FACILITIES

A facility for reading punched or OMR marked cards directly to floppy disk now exists on campus. For further information call Irwin Talesnick (6287) or Tom Boyle (5797).

Tom Boyle

APOSTROPHES ON 1750

Normally the Xerox 1750 prints acute accents in place of apostrophes. The June 1980 IVINEWS described the use of "program mode" to print an actual apostrophe; however, a simpler technique has been found. The string "ESC Z" prints spoke 95 (the apostrophe) on 96 character wheels. Add the graph instruction

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{graph:<'{.33}Z>}
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to INIT.IVI (see manual section M.0.2 and page G.1.3/9). Note that only upper case Z will work (Y - will print the cent symbol on TITAN 96 print wheels).

Tom Boyle

LABEL NEED SURVEY

Some users need 3.5 x 1.5 inch labels one-across to handle longer addresses up to 8 lines (instead of 5 on the 3.5 x 1 inch labels).

Our supplier requires a definite quantity commitment and delivery schedule over a one year period to give us a good price. Please fill out and return the survey form to Vello Sepp at Queen's University Computing Services.

3.5 x 1.5 INCH LABELS SURVEY FORM

1. How many boxes of 3.5 x 1.5 inch labels 1-across would you use in a year (5000 labels in a box)? ________

2. When do you need them? ____________________

3. How many boxes of 3.5 x 1 inch labels would this eliminate (5000 labels in a box of 1-across)? ________

4. How many boxes of 4 x 2 inch labels would this eliminate (3000 labels in a box)? ________

PREAMBLE

This document is a response to various issues raised at recent Word Processing Management Seminars.

ORGANIZATIONAL ISSUES

1. THREE MODELS

Three distinct word processing office organization models have been developed at installations at Queen's.

A) The Word Processing Centre

The Word Processing Centre is organized around a Word Processing Manager who monitors all word processing activity, a number of experienced operators and physical centralization of the equipment.

This type of organization has the advantage that it makes very efficient use of resources and high quality advice is readily available. Casual use of the equipment is, however, restricted. This may discourage experimentation with its application to novel projects. Moreover, friction may develop if differences of opinion exist as to whether or not the application of the system to a particular project can be cost justified.

B) The Dedicated Operator

At some installations an operator has been chosen to operate and manage the word processing resources.

Advantages of the Dedicated Operator system include reasonably efficient use of resources, high quality advice is readily available, there are no major management costs, and the equipment is available after hours for casual users. Disadvantages include scheduling problems which may arise when the operator must handle projects assigned by several persons of superior rank. The system is also sensitive to operator illness and holiday periods. The ability of the dedicated operator to use the system well may be limited by lack of opportunity to share experiences with other operators.

C) The Office Tool Model

In many offices, the word processor is made available as a general office tool on an ad hoc basis to staff who feel that they can make use of the equipment.

With this model, a large degree of experimentation with novel projects is possible. Also, staff concern about not having opportunity is minimized and operators can learn from each other's experiences. The use of the equipment, however, is not likely to be efficient. Lack of strict resource management may cause occasional conflicts between projects. Expertise required for some projects may not have been developed within any of the operators.

2. WORD PROCESSING MANAGEMENT

The type of organizational model that an office chooses to implement depends upon the staff and space resources of the office and the manner in which management feels the word processing equipment should respond to office tasks. The following are some of the important issues that an office should consider.

A) Word Processing Manager

When an office acquires a word processor, there is a need for control of this resource since there are competing and often unrealistic demands made of the system. It is unfair to force the operators to settle scheduling and priority conflicts. Moreover, the authority of an operator may not be respected by an author. The problem is most severe in the case of the "Office Tool Model" where there is no single person responsible for the use of the machine. To avoid this difficulty, the Administrative Assistant or Senior Secretary might be assigned to this task. Duties should include encouraging jobs to be done on the word processor, maintaining a filing system, scheduling priorities, and reporting breakdowns.

B) Type of Work

Word processing is generally suitable for tasks which involve multiple revision, tables requiring calculation, repetitive forms production and small data file maintenance. Multiple copies of a document, however, tend to be best handled with a photocopier and one or two page, unique letters are unlikely to be cost effective on a word processor.

C) Scheduling and Priorities

Efficient use of equipment demands scheduling and setting task priorities in order to maximize the utility of the system. Failure to do so results in operator and author irritation and underuse and contention for the equipment. This problem is most severe in those office models where there is no person designated to establish scheduling or priorities. It should be recognized that differing academic and administrative priorities and demands must be resolved.

D) Education

a) Operator

There are basically three methods by which operators at Queen's are educated. The first is introductory training on the machine. This is designed to introduce an operator to the equipment and range of tasks. The second type of education comes from interpersonal communication among operators and interdepartmental communication concerning tasks and procedures. The third type is task-specific advanced training provided by Computing Services.

b) Clientel

There is a need for users who do not operate the system to understand its capabilities so that their expectations of the system are realistic. This educating process can best be accomplished within the department by the person who establishes scheduling and priorities. As well, there are periodic seminars sponsored by Computing Services. Author education could be enhanced by encouraging author operation of the machine when it is not being used for production.

Two examples of problems which are a result of authors' unrealistic expectations are: i) authors demand multiple copies of a document rather than using a photocopier and ii) because authors perceive that manuscript revision is very easy, they do not proofread carefully and demand an abundance of drafts.

E) On-campus Support

Computing Services will help purchasers choose and acquire equipment and arrange for training.

Service contracts for the equipment are available through Digital Equipment Corporation. Computing Services will arrange these contracts.

Most commonly used supplies are available at Stationery Stores. Inquiries regarding other supplies can be made through Computing Services.

Personnel Services cooperates with Computing Services to sponsor periodic seminars for managers and operators.

3. OFFICE LAYOUT AND OPERATOR COMFORT

The choice of equipment location will depend on the word processing office model used and the characteristics and priorities of a specific office. Various factors should be considered when selecting a location for the word processing equipment.

From an operational point of view, the three system components - terminal, disk unit and printer - should be within easy reach of the operator. If the complete system is located within a business or department office, the noise of the disk unit and particularly the printer may create discomfort and distraction for others in the office. However, the operator of the word processing equipment is available to perform other office tasks, such as phone answering, if the office is short staffed. These interruptions can be expected to reduce the efficiency of the word processing operator.

To alleviate the noise problem, sound covers for the printer can be purchased; or the printer and possibly the disk unit can be placed in a nearby room. Separating the operator from these devices results in tasks, particularly printing tasks, being more time consuming.

Another alternative is to move the operator and equipment together to a separate room. This strategy is advantageous in that operator interruptions are minimized, but it may create problems in adequately staffing the main office.

Purchase of additional office equipment can enhance the productivity of the word processor. As much care should be taken with respect to choice of desk and chair as in outfitting a typing station. Such considerations should include the height of the keyboard, the height of the screen, the comfort of the chair, noise covers for the printer, and arrangement of lighting to reduce screen reflections. Any accessories to reduce operator fatique are important.

Changes to the office work schedule by introducing more frequent break periods or by scheduling operator rotations have been found to reduce operator fatique and frustration.

4. STAFF RELATIONS

A department considering the purchase of a word processing device should be aware that a variety of staff reactions may be expected as a result of acquiring the new equipment.

If junior staff are assigned to operate the device, senior staff may later resent the lack of access to a new office tool. If only a few staff have a chance to learn how to use the word processor, others may feel penalized; there can be problems and frustrations if more than one person has a legitimate need for the machine.

It is helpful to consider these possibilities in advance so that potential problems can be minimized.

120